Introducing

Certificate Maker.™

Because accomplishments deserve to be recognized.

Offer Congratulations! Say Thanks! Have Fun!

Giving someone a certificate is a wonderful way to recognize an outstanding achievement. It's also a perfect way to have a little fun.

Certificate Maker™ gives you **over 200 professionally designed certificates.** From strictly official to fun and witty, there's something for everyone and every occasion. So you can surprise a family member, praise a student, applaud an athlete and honor an employee with great looking certificates. And each one will be as personal, professional and special as you choose.

Personalized certificates in minutes.

Simply choose a certificate, select a border, type your message; add a date and signature... then print! It's that quick and that easy.

You can even create a name file and automatically personalize certificates for everyone in your class or club!

Over 200 exciting Certificates, Awards, Diplomas, and Licenses.

SPRINGBOARD

Now available for Apple II+, IIe, IIc, and IBM PC • Springboard Software, Inc. • 7808 Creekridge Circle • Minneapolis, MN 55435 • (612) 944-3915

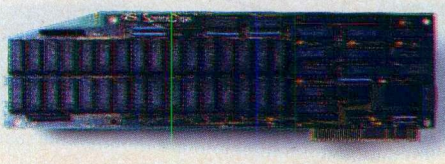
CIRCLE 261 ON READER SERVICE CARD

Why The Biggest Names In Soft AST's SprintDisk™ Memory

AST and leading software manufacturers are working together to break new ground, establish new standards and provide new solutions that enhance the power of your Apple II for your serious business and educational needs.

In making their hardware compatibility choices—choices that can make or break their companies—the software leaders look to AST, the hardware leader with the proven track record. So should you.

AST is the world's leading supplier of enhancement products for personal computers with a well-earned reputation for outstanding quality and reliability. We offer a full-line of products for the Apple II and Macintosh™ families. And you've heard of our award-winning SixPakPlus® multifunction card for the IBM PC—the defacto industry standard with well over 500,000 shipped.



Introducing SprintDisk: Up To 2 MB Of Memory Expansion And All The Software Compatibility, With None Of The Modifications.

The new generation memory card is here, now you can break the 64K barrier with all the software compatibility you need. Designed for use as a rapid-access, mass-storage device, SprintDisk provides up to 2 Megabytes of desktop workspace for your spreadsheets, word processing documents and databases.

Good-bye Software Patches. With SprintDisk you can take advantage of expanded memory while saying "good-bye" to the hassles of modi-

*The most current versions

SprintDisk, SprintCache trademarks and SixPakPlus registered trademark of AST Research, Inc. Apple registered trademark and Apple II, Macintosh, AppleWriter II, AppleWorks and ProDOS trademarks of Apple Computer, Inc. BusinessWorks is a trademark of Manzanita Software Systems. MouseWrite is a trademark of Roger Wagner Publishing, Inc. Dollars and Sense is a trademark of Monogram. BPI and BPI Systems are trademarks of BPI Systems, Inc. Sensible Speller is a trademark of Sensible Software, Inc. Mouse Calc and Mouse Desk are trademarks of Version Soft. SuperCalc ³a is a registered trademark of Sorcim/IUS Micro Software, A Division of Computer Associates International, Inc. PFS: Write, PFS: Plan, PFS: Report, PFS: File and PFS: Graph are registered trademarks of Software Publishing Corporation. Catalyst is a trademark of Quark Incorporated. ReportWorks registered trademark of Megahouse Corporation. Pinpoint is a trademark of Pinpoint Publishing and Virtual Combinatics, Inc. Managing Your Money registered trademark of Micro Education Corporation of America.
Copyright ©1986 AST Research, Inc. All rights reserved.

ware Are 100% Compatible With Expansion For The Apple II.™

fications. All your favorite applications software* (those illustrated above and more) are completely, automatically and immediately compatible. Of course, SprintDisk is ProDOS,™ DOS 3.3 and Pascal 1.3 compatible.

We Make Apples Grow!

The Speed of AST's SprintCache™ Buffer. We include exclusive utility software – we call it SprintCache – so if you are using multiple storage devices, you can also use SprintDisk as a caching buffer. It allows you to cache up to fourteen floppy, hard-disk or tape drives for higher performance and greater productivity.

Hardware Facts. SprintDisk is compatible with the Apple II Memory Expansion board. It's fully socketed and user-upgradeable with 256 Kb chips. And it comes with its own RAM diagnostic software.

The Quality, Service and Support of an Industry Leader. AST's worldwide reputation is built on quality. SprintDisk features the highest-quality four-layer construction and undergoes extensive testing and comprehensive burn-in procedures for the ultimate in reliability – AST has the lowest product failure rate in the industry. And don't forget our two-year warranty, world-renowned service and customer support.

For more information call (714) 476-3866 or circle the reader service below.

FEATURES

SprintDisk

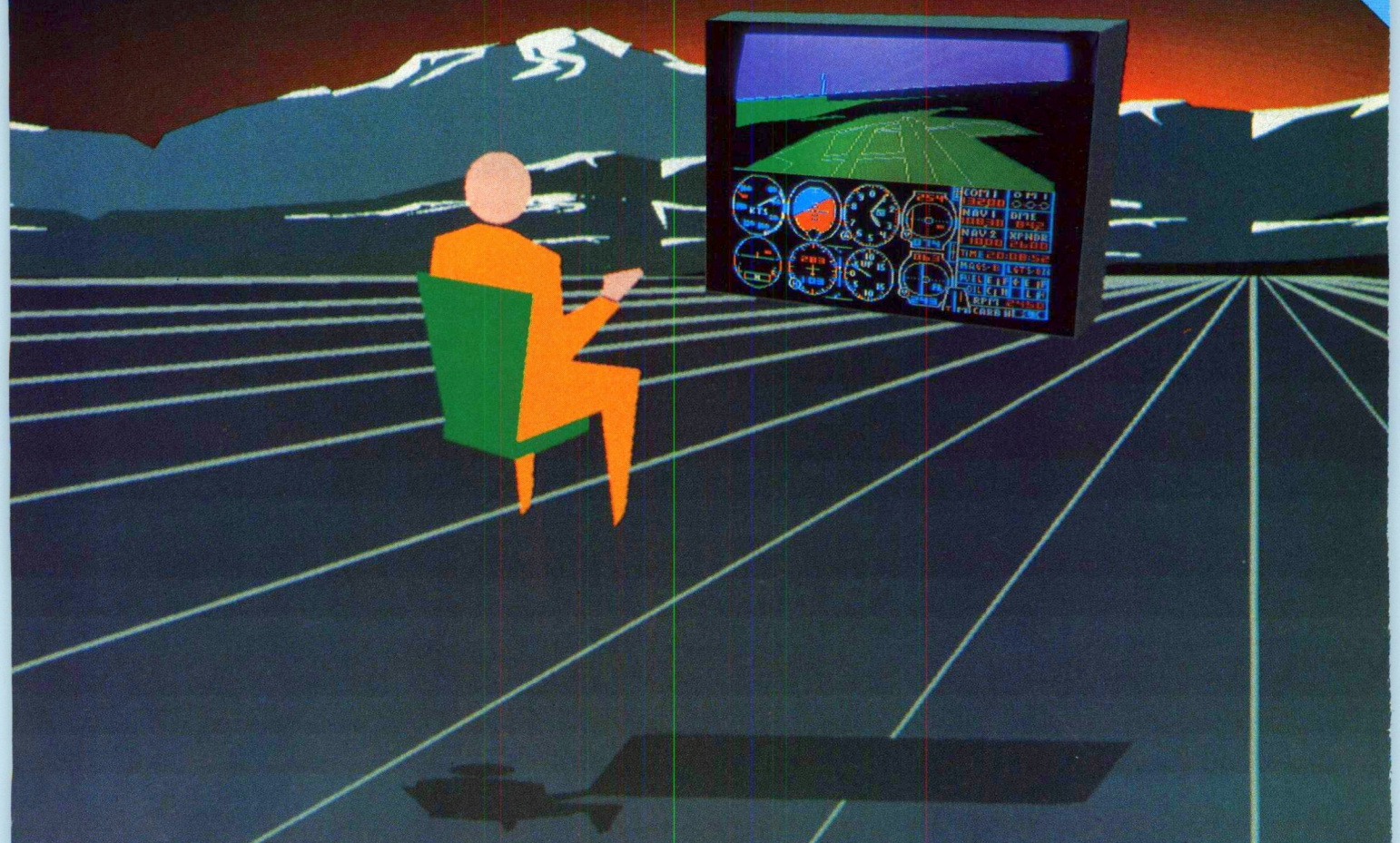
- Up to 2 MB Total Memory
  - 256 Kb to 1.0 MB on mainboard
  - Up to 1.0 MB additional memory on piggyback card
- Apple II Memory Expansion board compatible
- SprintCache for fast, user-transparent disk/tape caching
- ProDOS, DOS 3.3 and Pascal 1.3 compatible
- No application software modifications necessary
- Fits any I/O slot except #3 in II, II+ or IIe
- Fully socketed and user-upgradeable

CIRCLE 323 ON READER SERVICE CARD

AST RESEARCH INC.

Flight Simulator II

For Apple II, Apple II+, & Apple IIe



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

See your dealer . . .

or for direct orders enclose $49.95 plus $2.00 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800 / 637-4983

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

CIRCLE 110 ON READER SERVICE CARD

Publisher
Sydney H. Rogers
Editor in Chief
Maggie Canon
Executive Editor
Frederic E. Davis
Technical Editor
Chip Carman
Senior Copy Editor
Eva Langfeldt
Managing Editor
Leslie Steere
Assistant Editor
Carol Person
Office Manager
Marjorie Gae Brandon
Contributing Editors
Chris Albertson, Mary Bohannon, Michael Callery, Charles Doherty, Russ Lockwood, Steve Rosenthal, Charles Rubin, Vanessa Schnatmeier, Roberta Schwartz, Rhoda Simmons, David Thornburg, Michael Wiesenberg
Art Director
Peter A. Tucker
Associate Art Director
Fabian Cooperman
Art Assistant
Ae Kyung Kuark
Mechanical Artists
Steve Campbell, Nancy Brown,

Editorial Office: 11 Davis Drive, Belmont, CA 94002; (415) 598-2290
Advertising/Business Office: Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016, (212) 503-5105
Subscription Inquiries and Service: A+, P.O. Box 2965, Boulder, CO 80322, (303) 447-9330

Advertising Director	Suzanne M. Zellner
Northeast Manager	Thomas E. Richardson
Mid-Atlantic/Southeast Manager	Chris M. Tice
Mid-West Manager	Thomas J. Lutzke
Northwest Manager	David J. Ezequelle
Southwest Manager	Cynthia L. Ramsey
Telemarketing Manager	Leslie Phillip
Advertising Coordinator	Ilene Morris
Account Representatives	NORTHEAST Leslie Phillip MID-ATLANTIC Peter Stangel MID-WEST Peter Stangel
Assistant to Publisher	Helen Kempisty
Single-Copy Sales Director	Robert Woltersdorf
Circulation Manager	Charles Mast

ZIFF DAVIS PUBLISHING COMPANY

President	Kenneth H. Koppel
Senior Vice President, Marketing	Paul Chook
Vice President, Operations	Baird Davis
Vice President, Controller	John Vlachos
Vice President, Creative Services	Herbert Stern
Vice President, Circulation	Alicia Marie Ivans
Vice President, Circulation Services	James Ramaley
Vice President, Marketing Services	Ann Pollak Adelman
Vice President, Development	Seth Alpert
Vice President	Hugh Tietjen
Business Manager	Gary A. Gustafson
Production Director	Walter J. Terlecki

ZIFF COMMUNICATIONS COMPANY

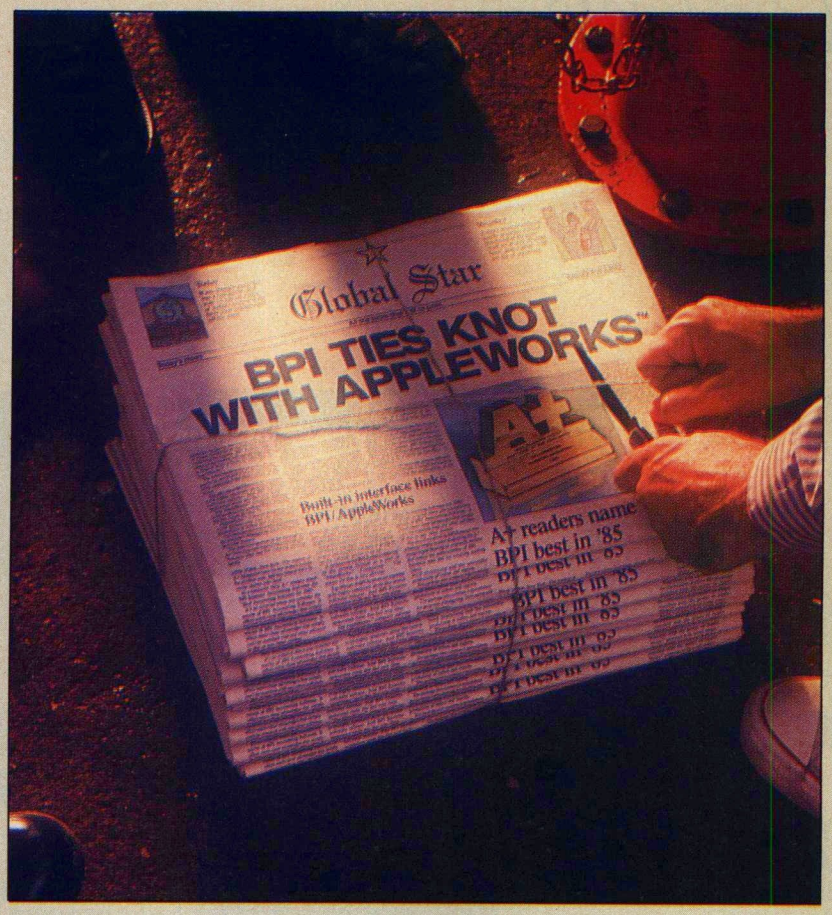
President	Philip B. Korsant
Executive Vice President	James D. Dunning, Jr.
Senior Vice President	Kenneth H. Koppel
Senior Vice President	Philip Sine
Vice President	Laurence Usdin
Vice President	William Phillips
Vice President	J. Malcolm Morris
Vice President	Steven C. Feinman
Treasurer	Selwyn I. Taubman
Secretary	Bertram A. Abrams

A+: The Independent Guide for Apple Computing ISSN (#0740-1590) is published monthly for $24.97 one year, $43.97 two years, and $57.97 three years. Additional postage $6 for Canada, $6 other foreign by Ziff-Davis Publishing Co., One Park Ave., New York, NY 10016. Second-Class Postage paid at New York, NY 10016 and at additional mailing offices. POSTMASTER: Send address changes to A+, P.O. Box 2965, Boulder, CO 80321.

A+ is an independent journal, not affiliated in any way with Apple Computer, Inc. Apple is a registered trademark of Apple Computer, Inc. Entire contents Copyright © 1986 Ziff-Davis Publishing Co. All rights reserved; reproduction in whole or in part without permission is prohibited. The following are trademarks of Ziff-Davis Publishing Co.: A+, A+: The Independent Guide for Apple Computing, MacTips, Rescue Squad, That's Entertainment.

Permissions: Material in this publication may not be reproduced in any form without permission. Requests for permission should be directed to the Licensing Manager, Jean Lamensdorf, Ziff-Davis Publishing Company, 1 Park Ave., New York, NY 10016. BPA membership (Selected Market Audit Division) applied for October 1983.

BPA



It's hot off the press.

The ink is barely dry on page one and already the demand is overwhelming for BPI's newest release. But you don't have to be an investigative reporter to understand the incredible appeal of joining the proven superior features of BPI accounting software with the word processing, spreadsheet and data base capabilities of AppleWorks.

Or to offer the best accounting software with a built-in interface for AppleWorks. We had to go and deliver the whole package on both the new UniDisk 3.5 format and the standard 5¼ inch floppy disk.

So talk to your favorite dealer or give us a call. We'll send you information that will let you read all about the best news in recent software history. Get it while it's hot!

Extra! Extra!

Available on UniDisk™ 3.5 Format.

As if it's not enough for BPI to be named "Best Accounting Software for 1985" by A+ readers.

BPI SYSTEMS™
3001 Bee Cave Road
Austin, Texas 78746
1-800-531-5252

CIRCLE 290 ON READER SERVICE CARD

Winner! 2nd year in a row, Readers Choice Award.
Business Accounting, Apple II.

Contents

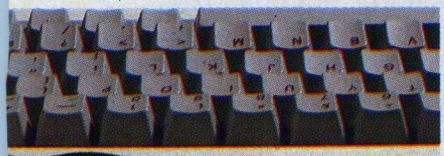
AUGUST 1986/VOLUME 4/ISSUE 8

A+

THE INDEPENDENT GUIDE TO APPLE COMPUTING

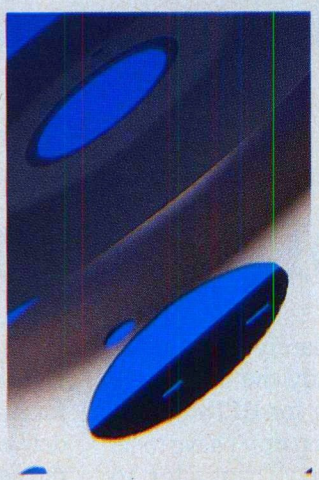
COVER STORY

20
TURBOCHARGING YOUR APPLE IIe
BY GARY B. LITTLE
Learn how to soup-up your IIe with speed-up cards that improve processing power, memory cards that provide more workspace, and high-capacity disk drives that speed up disk input/output operations. This story also includes a chart of the products available to help you increase the power of your IIe.



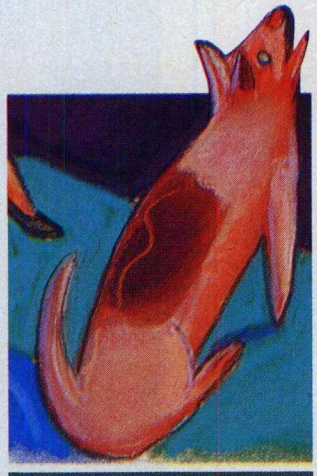
SOFTWARE

30
CHEAP THRILLS
BY PAUL FREIBERGER
Ever wondered whether the programs in public domain are any good? Veteran industry writer Paul Freiberger discusses the pros and cons of public-domain software and where to get it, and he takes a look at a some of the programs you can obtain.



MAINTENANCE

36
A DISKETTE PRIMER
BY PHILIP CHIEN
A diskette is one of the most vulnerable components of your computer system. An understanding of floppy diskettes and their care will help keep your Apple running smoothly. Read this article to find out how to take care of your floppies if you are new to computing or just need a refresher course in floppy disk maintenance.



SOFTWARE

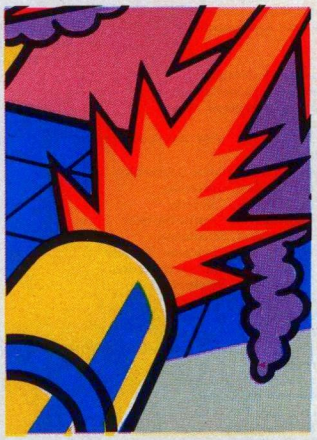
44
APPLE WRITER II WORD PROCESSING LANGUAGE
BY J.P. NEIL
The Apple Writer II word-processing program and its associated manual are comprehensive and the many applications well presented, but the manual does neglect a few significant areas. This article deals with one of the most important missing items, the creation of form letters and addressing of associated envelopes.

QUICKTAKE

53
COMPUTEREYES
BY ROBERTA SCHWARTZ
What's that you say? You'd like a video digitizer, but you don't have any slots left in your Apple II Plus or IIe? You've looked around and every system you've seen involves complicated hardware and software? Well, look again, at this review of ComputerEyes, an inexpensive video-acquisition system.

ENTERTAINMENT

78
CLASSICS
BY DONALD OLIVER
Summer is upon us, and while young people's fancies turn to vacations and beach parties, software manufacturers are knocking themselves out to alert the public to their new computer games. For a change of pace, however, we asked writer Donald Oliver to draw your attention to some of the oldies but goodies of the entertainment market.



DEPARTMENTS

9
EDITORIAL

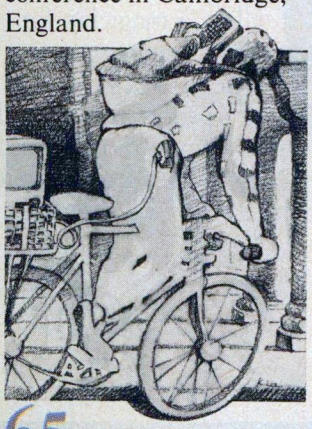
11
LETTERS

15
NEWSPLUS
BY FREDERIC E. DAVIS
News and views of the personal-computer industry

COVER PHOTOGRAPHY BY CARTER DOW

DEPARTMENTS, Continued

59 THE LEARNING CURVE
BY DAVID D. THORNBURG
David reports on his trip to the International Apple University Consortium conference in Cambridge, England.



65 THAT'S ENTERTAINMENT
Reviews of U.S.A.A.F. by Strategic Simulations, Inc.; A Mind Forever Voyaging by Infocom, Inc.; Adventure Construction Set by Electronic Arts; and Microsoft's Flight Simulator.

85 TELECOMMUNICATIONS
BY RUSS LOCKWOOD
Service starts and stops, Macintosh E-Mail, and Teletips galore.

106 PIPELINE
BY CAROL PERSON AND RHODA SIMMONS
Products you want to know about—for the entire Apple-computer line

115 THOUGHTWARE
BY STEVE ROSENTHAL
Why can't the Macintosh read a 3.5-inch diskette created with an Apple II UniDisk? And why can't you use a Macintosh to read a diskette written by an IBM PC with 3.5-inch drives? Rosenthal ponders these and other pressing questions in this month's Thoughtware.

118 RESCUE SQUAD
BY GARY B. LITTLE AND CHRIS VAN BUREN
Little and Van Buren answer your questions about custom device-controller programs, to enhance or not enhance, and speeding garbage collection.

120 A+ DIRECTORY

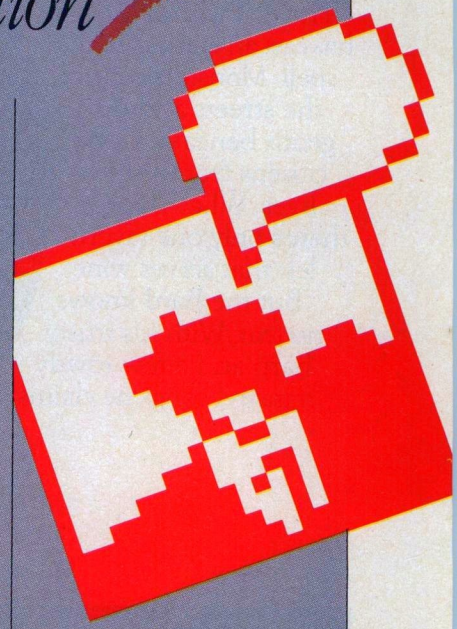
123 A+ MART

125 MACINTOSH DIRECTORY

126 INDEX TO ADVERTISERS

128 COMING SOON

The Macintosh Section



91 68000 ASSEMBLY-LANGUAGE PROGRAMMING, PART III
BY GARY B. LITTLE
In this, the final installment in a three-part series on 68000 programming on the Macintosh, Little looks at some of the programs that make up Apple's Macintosh 68000 Development System. He also shows you how to create a simple Macintosh application.

68000

99 CUSTOMIZING YOUR ELECTRONIC WORKPLACE
BY ROBERT C. ECKHARDT
Although the Macintosh offers one of the most comfortable and intuitive working environments around, all of us have ideas about how to make our Macs even easier to work with. From changing menus to creating new icons, several utility programs give you the power to act on your ideas, turning your Mac into a truly personal computer.

105 MACTIPS
Suggestions from our readers

(No I.D. required for half-elves.)

When the Going Gets Tough, the Bard Goes Drinking.

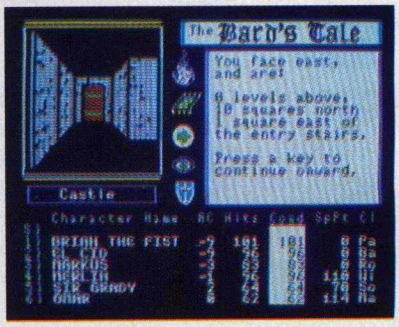
And the going is tough in Skara Brae town. The evil wizard Mangar has cast an eternal winter spell. Monsters control the streets and dungeons beneath. Good citizens fear for their lives. What's worse, there's only one tavern left that serves wine.

But the Bard knows no fear. With his trusty harp and a few rowdy minstrel songs he claims are magic, the Bard is ready to boogie. All he needs is a band of loyal followers: a light-fingered rogue to find secret doors, a couple of fighters to bash heads, a conjurer to create weird allies, a magician for magic armor.

Then it's off to combat, as soon as the Bard finishes one more verse. Now what's a word that rhymes with "dead ogre?"

4 classes of magic user, including wizard and sorceror. 85 new magic spells in all.

128 color monsters, many animated. All challenging.



Full-color scrolling dungeons. 16 levels, each better than the one before. 3-D city, too.

Optional use of characters created in Wizardry® or Ultima III®

The Bard's Tale™

from

ELECTRONIC ARTS™

Specs: 100% machine language, 400K worth on 2 disks. 64K RAM minimum; enhanced for 128K. Now available for Apple II family for $44.95, C-64 & 128 for $39.95.
To order: Visit your retailer or call (800) 245-4525 (In Calif. call (800) 562-1112) for VISA or MasterCard orders. To purchase by mail, send check or money order to Electronic Arts, P.O. Box 7530, San Mateo, CA 94403. Add $5 for insured shipping and handling. Allow 1-4 weeks for delivery. The Bard's Tale is worth the wait.

Apple is a trademark of Apple Computer. Wizardry is a registered trademark of Sir-Tech Software, Inc. Ultima is a registered trademark of Richard Garriott. The Bard's Tale and Electronic Arts are trademarks of Electronic Arts. For a copy of our complete catalogue and direct order form, send $.50 and a stamped, self-addressed envelope to Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404.

CIRCLE 168 ON READER SERVICE CARD

Message from Maggie

VACATION WORKOUTS FOR YOUR II

Summer is my favorite time of year. The days are long and warm, and we pack up our bags and head out for some fun and sun. Vacations are traditional for many of us just about now because the weather is good and business in general settles into a lull. The microcomputer industry is no exception to this tradition. It is the time when we start to plan for the fall, catch up on paperwork, and take some time off.

Important new products, such as significant new television shows and movies, are rarely introduced in the middle of the summer, and unfortunately this summer is no exception to the tradition. Even though this is the time for vacations and relaxation, I have never agreed with the personal-computer hardware and software manufacturers' belief that computing comes to a standstill. In fact, computer users remain quite active, which is evidenced by our mail and by our reader-service responses to advertisements.

Since I'm convinced that you don't just stuff your Apple into the closet until September, our cover story this month aims to bring you up to date on keeping your Apple in competitive condition.

With all the talk this year in the IBM market about faster processing speeds and more storage capacity, you might be beginning to feel left in the dust. You don't have to be, though. With the addition of a memory card, a hard-disk drive, and some special software, your Apple can be just as efficient as your neighbor's PC. To show you how to get more out of your computer, we asked Gary Little to write our cover story on how you can soup up your Apple II and keep up with the Joneses.

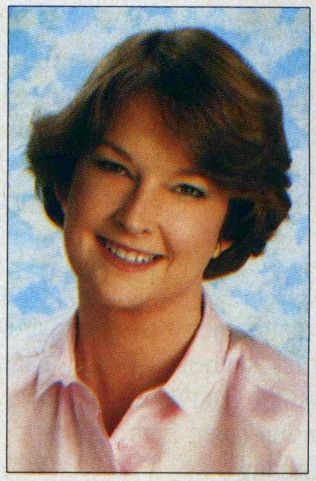
I would also like to bring your attention to something I know you have been waiting for: my response to your outcry about my May editorial on illegal software copying. I received too many responses to include them all on this page, so I've devoted the entire letters section in this month's issue to reprinting a sampling of the hundreds of responses I received from you on this controversial issue.

Although I shouldn't have been surprised, I have to admit I was astonished at the vehemence with which many of you responded to my editorial. Obviously, software copying is not quite such a clearly cut issue as I would have liked to make it. Many of you had interesting and certainly heartfelt reasons for feeling justified in making copies of software. I think the best way to calm the storm is to let you have your say, so turn to the letters section and read on.

Since we hope you will take *A+* to the beach or park for some of your summer reading, we have included a little lighter fare as well. Most of us like to play games during our spare time, and computer enthusiasts are no exception. In fact, game software helped launch the personal-computer revolution. New games come out every year, but you can still get ahold of some great classics that you shouldn't overlook. To bring these oldies but goodies to your attention, we commissioned a retrospective of some of the all-time computer-game greats. So be sure to take a ride down memory lane and read the article "Entertainment Classics." Enjoy the issue! +

Maggie Canon

MAGGIE CANON/**EDITOR IN CHIEF**



Even though this is the time for vacations and relaxation, I have never agreed with the personal-computer hardware and software manufacturers' belief that computing comes to a standstill.

What the Experts are Saying About RamWorks II!®

"In an informal competition called '640K vs. 640K' AppleWorks running on a RamWorks equipped Apple IIe outperformed Symphony running on an IBM PC."
—*InfoWorld*

"AppleWorks wiped out Symphony... The competition was set up partly to show off another of Wozniak's favorite things, the RamWorks II memory expansion board from Applied Engineering . . ."
—*San Jose Business Journal*

"There are huge differences among the AppleWorks modifying programs sold with the cards. Without doubt, RamWorks II is the most powerful."
—*inCider*

"Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks. . . I like the product so much that I am buying one for my own system."
—*A+ Magazine*

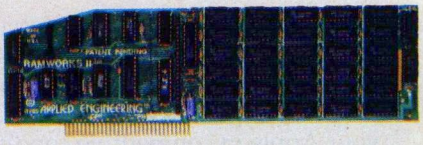
"RamWorks II is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars... For my money, Applied Engineering's RamWorks II is king of the hill."
—*inCider*

As you can see, it's easy to tell who sets the pace in Apple memory expansion. In fact, if you read the competition's ads, you'll notice that many even claim to be as good as RamWorks. Some say they're "RamWorks compatible". At least they agree on one thing. RamWorks is the one they have to measure up to. But the truth is there aren't any substitutes for RamWorks.

Because RamWorks and Z-RAM have a mesmerizing list of characteristics that, as you use them, will change your perceptions of an Apple computer forever. Achieving a level of speed and performance most critics claim is the best they've ever seen. But we want to do more than impress the experts, we want to impress you!

Applied Engineering stands ready to solve your expansion needs today and tomorrow with the largest and best supported product line in the industry.

Call Applied Engineering at 214-241-6060, 9 am to 11 pm. To get the very best.



RamWorks II®

The recognized industry standard for memory expansion in the Apple IIe.

AE™

214-241-6060

Letters

We invite your comments.

TO OUR READERS:
Of all the topics we discuss in the pages of this magazine, software piracy is by far the most controversial. The volume of mail I received after my May editorial, in which I spoke out against illegal software copying, made the contentiousness of this issue abundantly evident.

In that editorial I asked for suggestions and said I sought an open dialogue, so I am excerpting some of the letters I received. This issue is complex and emotional, and everyone seems to have something to say, so this time it is your chance to voice your viewpoint. I wish to respond to only one of the many accusations and condemnations: that I am hypocritical for denouncing illegal software copying when *A+* runs advertisements for products that crack copy protection. Most magazines, and especially *A+*, have a distinct separation between editorial and advertising (like that between church and state). I do not control the advertising aspects of this magazine, and, likewise, the advertisers do not control the editorial aspects.

So, here are the excerpts from your letters:

The problem of software piracy has arisen and survived because any data on a disk can be loaded into a computer and then written to another. But wait! How about using a read-only disk medium? Five-and-a-quarter-inch and three-and-a-half-inch disks are readable and writable, but as of now, compact disks are read-only. Users can boot the program from a CD-ROM drive and then use a 5¼- or 3.5-inch disk for data storage. I have yet to see pirated copies of Grolier's Electronic Encyclopedia floating around, simply because the data can be loaded but not resaved. If and when CD-ROM drives become standard computer peripherals, people will be unable to copy software stored on CD's.

Mike Anderson
St. Louis, MO

Some sort of protection is needed for the manufacturers. I would advocate some sort of serial number contained on the diskette and displayed each time the software is run. This number would also be on the product-registration card. Sending in the card would register one as the purchaser and owner. I think that this might serve as a deterrent to piracy.

Dean S. MacLaughlin
Watertown, MA

This month's letters are all responses to the controversial issue of software piracy.

Your editorial in the May issue is one with which I agree and comply and that, for me, brings forth comparisons with another hobby in which the problem is much older, if not much better resolved. I first became involved with high-fidelity sound 35 years ago, when the best available equipment was usually home-designed and -built. As time has passed, several things have happened. Equipment manufacturers have proliferated and quality outrun our fondest dreams. The ability to dub has approached perfection. Copying has become so widespread that the industry repeatedly tries to impose taxes on blank tape to recover revenues lost to the private pirates.

I would suggest that if software manufacturers want users to keep faith with them, then they should keep faith with those users. In short, if users are expected to be honest, so should the manufacturers and the retailers. A good place to start would be honest representation of what programs are and are not, will and will not do, on what equipment, and what third-party enhancements are supported. This is a tall order, but some software developers are doing a good job—many are not.

Irwin Knigge
Rapid City, SD

Having read your editorial in the May 1986 edition, I first want to commend you for your willingness to take what seems to be an unpopular stand on your feelings about infringing on software copyrights. I also couldn't help noticing that in nearly every ad for mail-order software, copy programs were mentioned. It seems to me that while you condemn copying software, you are willing for your magazine to make money advertising the means for copying programs. There seems to me to be a conflict here.

Vernon J. Sansom, Jr.
Bolivar, TN

I should say first of all that I think it admirable that you "moderated a panel on software piracy." But did you really expect the attitudes of software users to have changed? Consider our nation's 55MPH speed limit. It is a law. People break it. And I think you would find a number of drivers (perhaps even those on the *A+* staff?) who would unashamedly admit to having driven over 55 and who might have "felt fervently justified in their actions." The problem, with both software pirates and highway bandits, is that they are *individuals*. I

imagine few drivers feel that by driving the speed limit, they alone have contributed to saving energy and lowering the highway death toll. By the same token, very few software users feel that their copying software has singlehandedly dealt a death blow to the company that produced the software.

My concern is that by crusading so hard to protect the software producer, we may forget about the software user. Keep in mind that the guy next to you may have just bought one of those "good-looking bad things." For him, the "pirate" is the company that put out the bad product—and won't even let him back it up.

John Q. Phillips
Rochester, MI

In my opinion, there is no solution to the problem of "software piracy." As long as you have software manufacturers coming up with new copy-protection schemes, you'll have someone out there whose sole purpose in life is to copy those programs. A demo disk is the pits! Demo disks are half programs. One maker of financial software gave out free demo disks if you sent in a card from a magazine. The only number this demo allowed you to enter was 4. Now, can you really tell how well a program is going to work by only entering numbers like 444,444.44? Other demos are just hi-res commercials. They just don't do it.

Doug Tuccinardi
Wappingers Falls, NY

If making a backup copy is illegal, then I too am guilty. I think a good solution would be for the software developers to package two disks in the software package, so that there is no need for making an extra copy. The original price could reflect this, and additional copies should be available at cost in case of a crash.

Richard Carlson
San Diego, CA

My suggestion is for manufacturers to keep their protection to a minimum, just enough to stop truly casual copying or, even better, none at all (a nod to Penguin and Beagle Bros.) and take the cost of protection development out of the final price. There isn't a program or protection scheme around that cannot be broken.

My suggestions to stop piracy are these: (1) The computer manufacturers make their products compatible, giving the software manufacturers a larger market and letting them bring their prices down. (2) The software manufacturers stop concentrating on developing protection and concentrate more on the software itself. (3) The software manufacturers try bringing their prices down and stop publishing shoddy merchandise.

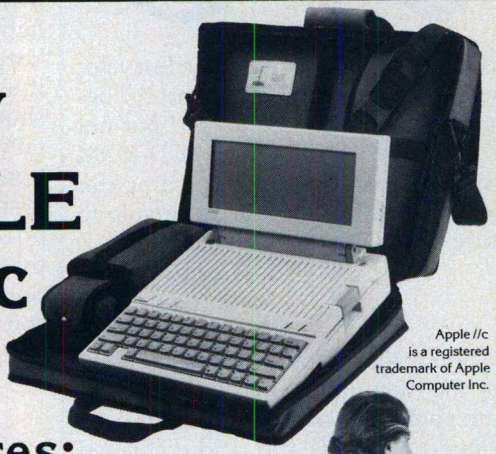
Nathan Cobb
Kingston, RI

I strongly disagree with your "Porsche" and "direct stealing from a computer store" analogies; they are completely irrelevant. If you examine the amended copyright laws for software, you will find that one *can* make a backup copy for oneself, by whatever means. It therefore is OK to copy software for oneself. The question is, then, whether you can give this copy to someone else. I think that this question is in the very gray area of the law.

William D. Callender
Bedford, MA

FIRST TOTALLY PORTABLE APPLE //c

Take it with you everywhere!



Apple //c is a registered trademark of Apple Computer Inc.

System Features:

- 24 Line by 80 Character LCD Display
- 8 Hour rechargeable power supply
- 21 lb. total system weight including //c
- Durable Cordura carrying case with handle and shoulder strap

Lowest Prices Yet!

• C-VUE Flat Panel Display	REDUCED! 349.00
• PRAIRIE POWER Battery Pack and Case	REDUCED! 150.00
• Checkmate Technology Specials:	
512K Multiram™ CX Board	REDUCED! 225.00
768K Multiram™ RGB Board	*NEW!* 269.00
768K Multiram™ //e Board	*NEW!* 219.00
• Apple //c Computer*	750.00

NEW! No Portable System Is Complete Without These:

• Apple //c Cigarette Lighter Adapter	29.95
• Apple //c Power Extension Cable	19.95
• Apple //c Power Y-Adapter	22.95

FREE! Price Quotes on all Apple Products & Peripherals

Ordering Information:

1-800-GET-CVUE (outside California)
(619) 274-1253 (within California & outside U.S.)
MasterCard and VISA accepted.

Prices subject to change without notice

ROGER COATS P.O. BOX 171466 SAN DIEGO, CA 92117

14-day money-back guarantee

Checkmate Technology, Inc.

*not sold individually

CIRCLE 109 ON READER SERVICE CARD

I can only speak to the problem from the perspective of a software user, not as a software vendor or magazine publisher. I don't see a software-piracy problem. I see a software-*protection* problem. Piracy is a technique I use to resist and educate (yeah, sure) inconsiderate software publishers. If you *really* think you can evaluate a product with instore trials, demo disks, or even magazine reviews, I would suggest that you've distanced yourself from your readers by becoming spoiled by review copies or by evaluating too many programs that you don't *need* to use.

I can assure you that I think more than twice before I knowingly purchase a copy-disabled product. Software publishers who sell disabled products are sending a very clear message. They consider their customers thieves and potential thieves. On the other hand, I pay for the shareware I use. I don't keep copies of unprotected software that I am not going to purchase. I don't give copies of unprotected software to people I don't trust to erase or buy after trying a program out.

One of The Rest of Us
Bend, OR

Although I agree with all that you've stated, I find it difficult to sympathize with software producers. Publishing software is not much different than publishing other copyrighted material. The music, book, and magazine industries have suffered from the copy machine over the years, and wouldn't you agree that Rogers and Hammerstein put in their share of time when they composed—only to have their works photocopied over and over? By the way, what message are you sending to your readers when the magazine you work for gains revenue from the copy programs it advertises? Me thinketh you speak with a forked tongue!

Dane Peters
Pomfret, CT

CORRECTION

On page 49 of our June issue, the contact information for PM Software, maker of Profiler, should have read as follows:
17610 Beach Blvd., Suite 29
P.O. Box 1788
Huntington Beach, CA 92647
(800) 628-2828 ext. 530 (orders only)
(714) 841-7400/(714) 963-2221

Capture $500 in Savings

Expand your System with Orange Micro®'s Rebate Bonanza

Orange Micro has already helped to expand over 350,000 Apple II systems with the revolutionary Grappler+ printer interface series. This summer, we are launching the **Rebate Bonanza**. Teamed with leading manufacturers, we'll provide you with over $500 worth of valuable coupons good for cash rebates and free merchandise on the most popular software and accessories for your Apple II. Exciting products from BPI, Broderbund, Data Transforms, Kensington, Koala, Orange Micro, Manzanita, Megahaus, Pinpoint, Quark, Roger Wagner and Sir-tech. All this, just for expanding your system with the most popular line of Apple enhancements in history.

Orange Micro – The Best Choice

From simple text to the most complex graphics, Orange Micro has the best solution for your Apple II. For IIe and II+ users, the Grappler®+ offers the industry standard with over 30 built-in features for unparalleled versatility in graphics and text. The Buffered Grappler+ merges Grappler print versatility with up to 20 pages of buffering to save you time. For text formatting exclusively, the Orange Interface™ offers intelligence for about the price of a "dumb" interface. And, the Serial Grappler+ provides exclusive color Grappler capabilities for ImageWriter II users.

If you own a IIc, Orange Micro again has the answers. For an effective and economical link to any parallel printer, the HotLink is what you need. For advanced graphics, the Grappler C is the most powerful IIc parallel interface available.

$10 Cash Rebate on the new ImageBuffer

Orange Micro has developed a revolutionary enhancement for Apple's ImageWriter II printer – the ImageBuffer. The ImageBuffer offers the most powerful print buffer available (up to 128K – 40 pages of text!) as well as the ability to make over 250 copies of any original. Snapping easily into the expansion port of the ImageWriter II, the ImageBuffer requires no power supplies or extra cables. Best of all, Orange Micro has included a $10 cash rebate coupon for the ImageBuffer in the **Rebate Bonanza**. That makes the ImageBuffer the best value available anywhere.

The Time is Now!

Orange Micro's **Rebate Bonanza** is on for a limited time only, so don't delay. Look for the specially marked packages or ask your Orange Micro dealer for details. Orange Micro products plus a $500 **Rebate Bonanza** to help expand your system. There's never been a better time to make the best choice in printer interfacing... ORANGE MICRO.

Orange Micro Inc.
1400 N. Lakeview Ave., Anaheim, CA 92807
(714) 779-2772

©Orange Micro, Inc. 1986

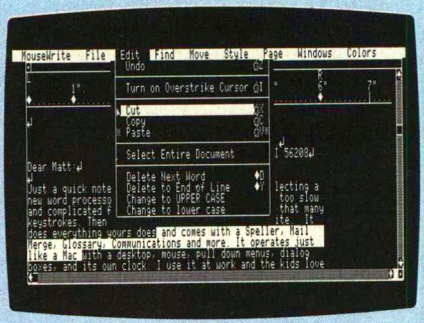
CIRCLE 258 ON READER SERVICE CARD

There Are a Lot of Great Reasons to Own MouseWrite...

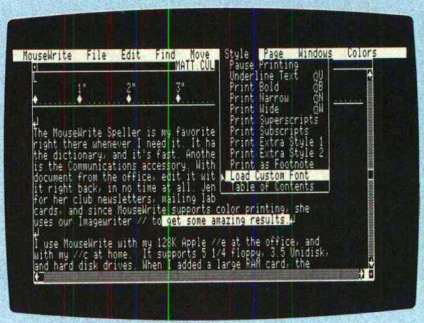
Reasons like being able to quickly correct any mistakes with **MouseWrite Speller**. It's built-in so it's there whenever you need it. Want form letters, labels, or 1000 individually addressed envelopes? **MouseWrite's Mail Merge** and **Glossary** get the job done for you.

Put pizzazz in your printouts by selecting anything from **Color** to **Custom Fonts**. Save time with **Print While You Work**. Get in touch with the world with **MouseWrite Communications**. 12 more great reasons are the 12 documents you can open at once on the **Expanded Desktop**.

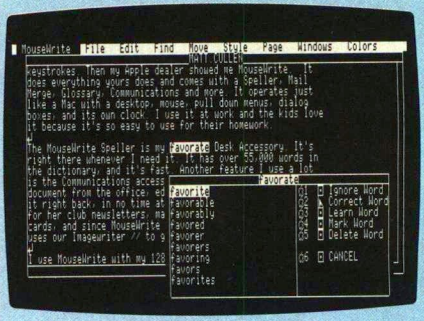
"Cut, Copy, Paste & Undo with Mac-like pull down menus"



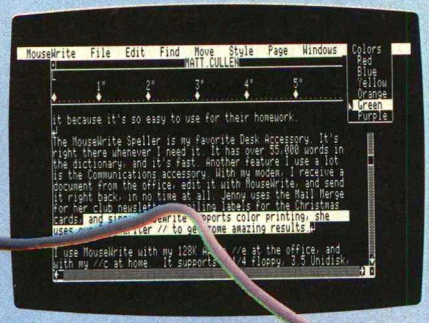
"Add style to your writing with downloadable Custom Fonts"



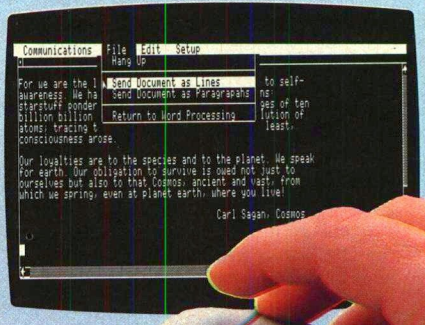
"Correct errors fast with the integrated MouseWrite Speller"



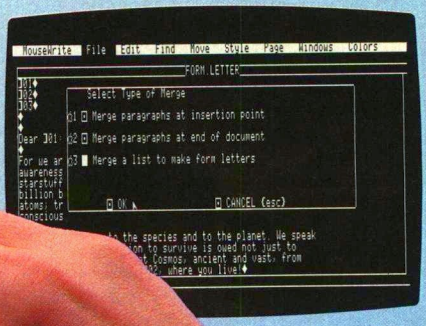
"Make a splash by adding color with ImageWriter II and others"



"Send and receive files with built-in Communications"



"Form letters in a flash with Mail Merge"



MouseWrite will also load AppleWorks documents directly, or even your old DOS 3.3 Text files. It works with your 5-1/4" disk, Unidisk 3.5, hard disk, or Extended RAM card.

Suggested Retail Price: $149.95

Ask your local dealer, or get all the details in the fact-filled MouseWrite brochure by calling:

800-421-6526 IN CA 619-562-3670

MouseWrite requires an Apple //c or 128k Enhanced Apple //e / Apple, Appleworks, ImageWriter are trademarks of Apple.

Roger Wagner™ PUBLISHING, INC.

CIRCLE 143 ON READER SERVICE CARD

10761 Woodside Avenue • Suite E • P.O. Box 582 • Santee, CA 92071 • 619/562-3670

BY FREDERIC E. DAVIS

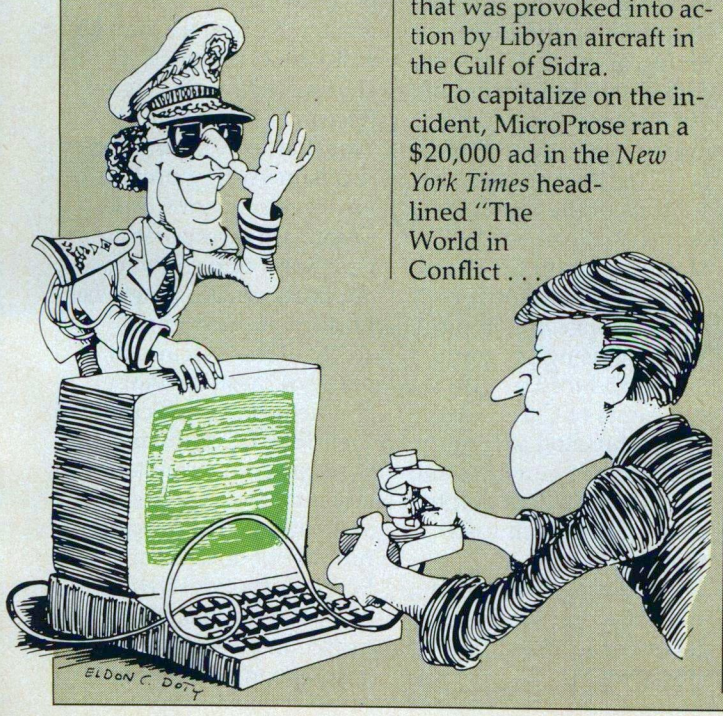
NewsPlus

Apple Computer is apparently readying both UNIX and IBM PC compatibility for the Macintosh line.

FIGHT STIMULATOR

In an attempt to keep its software abreast of current events, MicroProse software has updated the documentation of its popular F-15 Strike Eagle flight-simulator program to include information about the American air strike on Libya last April 14. The current version of F-15 Strike Eagle, which puts you in the pilot's seat of an attack bomber, includes a Libyan mission based on a real 1981 incident involving a U.S. Navy task force that was provoked into action by Libyan aircraft in the Gulf of Sidra.

To capitalize on the incident, MicroProse ran a $20,000 ad in the *New York Times* headlined "The World in Conflict . . . What Would You Do?" MicroProse, however, went a bit overboard when planning its *New York Times* publicity stunt. It wanted to include this ad copy: "You are the pilot of a twenty-million-dollar fighter. Your orders have just come through for an antiterrorist air strike against Libyan targets." The newspaper rejected the proposed ad copy, stating it felt it was in poor taste in light of the seriousness of the international situation. Even though MicroProse's proposed ad copy was shot down, the company says sales of F-15 Strike Eagle have been brisk.



UNIX- AND PC-COMPATIBLE MACINTOSH

In a move to strengthen the Macintosh's position in the business market, Apple Computer is apparently readying both UNIX and IBM PC compatibility for the Macintosh line. In a meeting with securities analysts this spring that was closed to the press, John Sculley is reported to have said that Apple will not only offer UNIX (as Sculley had stated on a previous occasion), but will also provide MS-DOS as an option for the Macintosh in an effort to offer a total system for computer users in government, science, and business. Sculley said that UNIX would help Apple woo the scientific and government markets and that MS-DOS would appeal to the business market. Apple also disclosed that it has acquired proprietary UNIX software from Cadmus Computer Systems of Lowell, Massachusetts, in order to boost its UNIX development.

END OF LISA TRADE-IN

Now is your last chance to trade in your Lisa or Macintosh XL for a Macintosh

Plus and 20-megabyte hard disk. Apple's offer to trade your Lisa/Mac XL and $1498 for a Mac Plus and Hard Disk 20 expires on August 29, 1986. On the other hand, if you are happy with your Lisa/Mac XL system, Apple promises to continue to service and support your existing hardware and software for five years after this date.

AT LAST!
A RIBBON INKER
MADE JUST FOR YOUR
EPSON

Why buy new ribbons when you only use the ink? Our newest Inker is specifically designed for all Epson fabric ribbons. This motorized Epson Inker will give your old ribbon a better print quality than new ribbons —for just pennies each inking!

FREE 4 oz. bottle of lubricated black ink, roller and roller cover.

NEW Epson Ribbon Inker Kit **$52.95**

ImageWriter I and II Ribbon Inker Kit . . **$49.00**

Mail Check or M.O. with $1.50 Shipping. Ohio Residents Add 6.5% Sales Tax.

bede tech

ORDER TOLL FREE
with Visa or MasterCard
800-772-4536

Member, The Bede Companies, Est. 1976
8327 Clinton Road
Cleveland, OH 44144

CIRCLE 244 ON READER SERVICE CARD

DIGITAL VISION

COMPUTEREYES™

VIDEO IMAGES ON YOUR COMPUTER!

Finally—an inexpensive way to capture real-world images on your computer's graphics display! COMPUTEREYES™ is an innovative slow-scan device that connects between any standard video source (video tape recorder, video camera, videodisk, etc.) and your computer. Under simple software control, a b/w image is acquired in less than six seconds. Unique multi-scan modes also provide realistic grey-scale images. Hundreds of applications!

Package includes interface module, complete easy-to-use software support on disk, owner's manual, and one year warranty all for $129.95 plus $4.00 S&H (USA).

Also available as a complete package including:
- COMPUTEREYES™
- Quality b/w video camera
- Connecting cable

for only $399.95 plus $9.00 S&H.

Demo disk available for $10.00 postpaid (refundable).

ONLY $129.95

See your dealer or order direct. Mass. residents add 5% sales tax. Mastercard, Visa accepted. To order, or for more information, write or call:

Available for:
- Apple II series
- Commodore 64/128
- Atari 800/800XL/65XE/130XE

DIGITAL VISION, INC.
14 Oak Street — Suite 2
Needham, MA 02192
(617) 444-9040, 449-7160

CIRCLE 170 ON READER SERVICE CARD

NewsPlus

The Macintosh was recently star witness in a murder trial.

MACINTOSH TESTIMONY

A Macintosh computer was recently a star witness in the first-degree-murder trial of Sagon Penn, who was charged with the shooting deaths of two San Diego policemen. The defense contended that shots had been fired in self-defense as Penn attempted to escape a brutal beating by the police. The defense's case centered on a 2.3-second tape sequence recorded by the police dispatcher that contained the voices of citizens complaining of police brutality; the voice of the dispatcher; and, faintly in the background, six sounds that both the defense and prosecution agreed could be gunshots. Determining the exact timing of these shots was critical to Penn's claim of self-defense. Defense attorneys hired speech expert Tito Poza to assist in analysis of the brief tape sequence. Poza used a Macintosh with the MacADIOS audio digitizer and MacSpeech Lab signal-processing program (both produced by GW Instruments of Cambridge, Massachusetts) to locate and time the gunshots and represent the data graphically on the Macintosh screen.

According to Poza, "I knew the only way I could get my specialized findings across to the jury was to play the critical section of the tape to them over and over, with millisecond timing . . . . [With the Macintosh] there were none of the false starts you get with an ordinary tape recorder." Although a verdict in the case had not been reached at press time, Poza said that the attorneys, the judge, and the jury were impressed with the Macintosh technology and its contribution to the analysis of important evidence.

POSTSCRIPT'S POPULARITY

The PostScript page-description language, created by Adobe Systems, was popularized when Apple decided to use PostScript to harness the power of the LaserWriter printer. Now more than 65 software companies, including Microsoft, Digital Research, MicroPro, WordPerfect Corporation, Addison-Wesley, and Lotus Development Corporation, are incorporating PostScript into software applications. No longer is PostScript the domain solely of the Macintosh; many of these developers are including PostScript in their IBM PC software so their programs can take advantage of Apple's LaserWriter and a growing number of other PostScript output devices.

PostScript has also grown in popularity among companies that

APPLE HARD DISK UPGRADES. ONE SIZE FITS ALL.

FULLY COMPATIBLE WITH APPLE® MACINTOSH™ 128 AND 512, MACINTOSH PLUS, IIe™ AND IIc.™

Finding a reliable and affordable hard disk for your Apple computer is easier than you think thanks to the new ProAPP™ 10 and 20 megabyte hard disk systems.

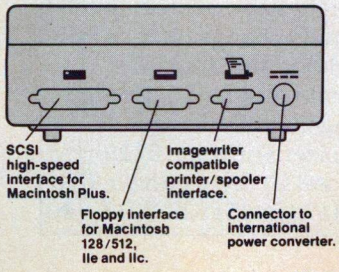
10MB HARD DISK SYSTEM—$795.
20MB HARD DISK SYSTEM—$995.

Attractively styled and priced to match, the compact ProAPP 10 and 20 are designed to work with all popular Apples. Everything you need is provided: cables, easy-to-use manuals and software. Simply plug in and run.

The ProApp 10 and 20 come ready to support the following Apples and operating systems: Macintosh 128 and 512, Macintosh Plus; IIc and IIe using ProDOS™, DOS 3.3 or Pascal 1.3.™

BUY DIRECT AND SAVE.

Right now, you can purchase the ProAPP 10 and 20 direct. This not only gives you the lowest possible price, but allows for faster, more responsive support.



ONE YEAR LIMITED WARRANTY.

The ProAPP 10 and 20 are rugged, reliable hard disk systems, incorporating the latest engineering advances like our SCSI interface and print spooler. That's why we can back them with a full 12-month limited warranty. And a toll-free hotline to answer any installation and operating questions you might have.

It's also reassuring to know that the ProApp 10 and 20 are designed and manufactured by some of the same team of experienced professionals who helped the industry leaders perfect their hard disk systems.

MONEY-BACK GUARANTEE.

Each ProApp 10 and 20 hard disk comes with a "no risk" money-back guarantee. Order the ProAPP and use it for up to 10 days. If you're not 100% satisfied with its performance, return it for a complete refund.

ORDER TODAY. CALL 800-424-2425.

To order your ProAPP 10 or 20, or for additional information, call toll-free. Use the coupon below and charge it to your VISA, MasterCard or American Express card, or send money order and get next week, UPS surface delivery. Allow approximately 30 days for personal checks to clear.

PROAPP™

10005 Muirlands, Suite 0
Irvine, CA 92718

Apple is a registered trademark, MAC and Macintosh are licensed trademarks, and ProDOS, Pascal 1.3, IIe and IIc are trademarks of Apple Computer, Inc. ProAPP is a trademark of ProAPP, Inc. All disk capacities are listed as formatted. ©1986 ProAPP, Inc.

Yes! Rush me the ProAPP hard disk system specified below, including all cables, manuals and software.

_____ ProAPP 10MB Hard Disk(s) at $795 each (includes shipping, handling and sales tax).

_____ ProAPP 20MB Hard Disk(s) at $995 each (includes shipping, handling and sales tax).

To receive correct cable kit, please specify your machine:

I have a ☐ MAC Plus ☐ MAC 128/512 ☐ IIe ☐ IIc

Name _____ Company _____

Shipping Address _____

City/State/Zip _____

Phone (____) _____

☐ I've enclosed my check or money order for $ _____

☐ Please bill the following credit card account for $ _____

☐ VISA ☐ MasterCard ☐ American Express Card Exp. Date _____

Card # _____

Signature _____

Mail to: ProAPP, Inc., 10005 Muirlands, Suite 0, Irvine, CA 92718 A+ 8-86

CIRCLE 175 ON READER SERVICE CARD

PRO/PAC™ *Professional Software Packages*

14925 Memorial Drive, Suite 123, Houston, Texas 77079
(713) 496-1179 Dept. A

PCP-PRINTER CONTROL PROGRAM

PRINTER CONTROL PROGRAM will help you set up your dot matrix printer with just the "touch of a key". This menu-driven pre-boot program allows you easy access to your printer's various fonts.

Join the thousands of satisfied users of the "ORIGINAL" PRINTER CONTROL PROGRAM-a user-friendly utility that sends command codes to program your printer for such print choices as: Bold, Emphasized, Double-Wide, Italics, NLQ and many combinations. Of course, the exact options depend upon the printer model but ALL versions offer many features.

PCP allows you to preview your choice of printstyle and make any changes you desire. PCP is available for all Apple II and III computers with dot matrix printers such as Apple DMP, Imagewriter I/II, Epson, C.Itoh, NEC, Okidata, Star, Panasonic, Canon and many others. New printers are added frequently.

We believe that PCP will help you to use the many features of your printer quickly and easily. Be sure to specify your computer and printer for receipt of the correct version. Only $29.95 plus $2.00 for shipping. "Just the touch of a key" can set your printer up to print your way!

WE NOW OFFER SOFTWARE & HARDWARE!

PINPOINT	$45
TIME IS MONEY	$68
PRINT SHOP	$36
GRAPHICS LIBRARY	$19
NEWSROOM	$36
CLIP ART COLLECTION	$29
MIND PROBER	$36
TYPING TUTOR III	$36
WHERE?CARMEN SAN DIEGO	$29
SENSIBLE SPELLER	$75
SENSIBLE GRAMMAR	$60
ALL PFS SERIES	FROM $70

APPLIED ENGINEERING PERIPHERALS

RAMWORKS II 64K	$142
RAMWORKS II 256K	$175
RAMWORKS II 512K	$215
Z-RAM 255K/512K	$287/$311
RGB	$106
TIMEMASTER	$106
Z-80+ & Z-80C	$113/$129
VIEWMASTER	$112
//C SYSTEM CLOCK	$ 63
TRANSWARP	$223
DISK DRIVES	$113

KENSINGTON SYSTEM SAVER - $67
DISKETTES - NAME BRAND & BULK
BONUS-$8.95
PRINTER INTERFACE CARDS
GRAPPLER PLUS - $78
IMAGEBUFFER - $72
RAM CHIPS/DUST COVERS/RIBBONS

THESE ARE JUST EXAMPLES. ALWAYS AT DISCOUNT PRICES - AT LEAST 20% OFF RETAIL. CALL OR WRITE FOR CATALOG.

THIS IS THE SMALL PRINT:
Prices, availability and specifications are subject to change. Returns require prior authorization. Texas residents must add appropriate sales tax. VISA and MasterCard orders not charged until we ship. Cashier's Check or Money Order payment may deduct 2% from merchandise total. S/H charges: $2.00 Minimum, Software $2.00 each, AE products-$5.00 each, Diskettes-$2.00/10. UPS ground shipping in the continental USA. Add 5% to total for shipment to P.O. Boxes, APO, FPO or Foreign countries.

CIRCLE 172 ON READER SERVICE CARD

BUSINESS • SCIENCE • EDUCATION

The complete Apple II statistical package for only: **$99**

APP-STAT™

A Powerful Tool for Data Analysis and Forecasting

- Easy to use, no commands to memorize (menu-driven)
- Descriptive Statistics, t-tests (independent and dependent samples), General ANOVA/ANCOVA (up to five factors, **unlimited number of cases**, Repeated Measures, unbalanced designs, contrasts, adjusted means, and more), Correlations, Multiple Regression (up to 15 predictors, **unlimited number of cases**), Crosstabulation, Significance Tests, 10 Nonparametric Statistics, and more
- User defined (multiple) conditional selection of subsets of cases, various ways of treating missing data
- Flexible Data Editor; easy entering/editing of data, complex (conditional) transformations of variables, and more
- Can also access files created by spreadsheets and data bases
- Barcharts, Scatterplots, clear comprehensive output
- Will run on APPLE II+, IIc and IIe with 80 column display, 1 disk drive

To order send check or money order for $99 (plus $5 for shipping and handling) to:

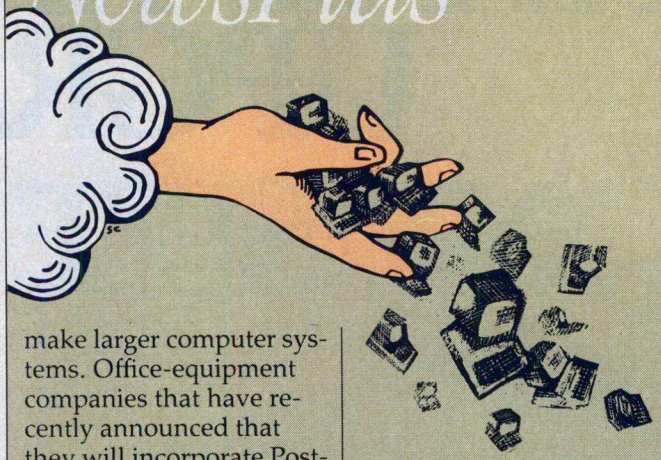
MasterCard **StatSoft**™ VISA

2832 East 10th Street, Suite 4, Tulsa, OK 74104. (918) 583-4149

ASK ABOUT THE VERSION FOR MACINTOSH!

CIRCLE 207 ON READER SERVICE CARD

NewsPlus



make larger computer systems. Office-equipment companies that have recently announced that they will incorporate PostScript into future products include Digital Equipment Corporation, NBI, and Wang. The PostScript bandwagon is now so full that any other page-description language, such as Xerox's InterPress or whatever IBM might adopt, will have a hard time replacing PostScript as the industry standard.

ALTRUISTIC APPLE

The Apple Computer Community Affairs program has awarded 59 computer systems, valued at more than a quarter of a million dollars, to 52 social-service and arts groups throughout the U.S. These systems are being used for a broad range of nonprofit purposes, such as linking resources for agencies serving the disabled in rural Washington state to provide training and employment in the recycling and horticulture industries; helping a network of four agencies in Tulsa, Oklahoma, create a database on child abuse; providing resources for several shelters for battered women; and even aiding a Kampuchean word-processing development project that will allow Kampuchean refugees to use a Mac.

Other groups the program has funded include a children's musical theater, an astronomy research center, the New York Hall of Science, and even an eye bank that plans to use its Apple to facilitate fast delivery of eye tissue for transplants. If you belong to a group you feel might be worthy of Apple's consideration in its next round of funding, you can obtain the guidelines for Apple's grant programs from Apple Computer Corporate Grants, 20525 Mariani Avenue, M/S 27-F, Cupertino, CA 95014.

EXCEL TEMPLATES

If you like the Excel spreadsheet program for the Macintosh as much as I do, you'll want to check out Excellent Exchange, a catalog of more than 70 Excel templates and macro programs. Excellent Exchange not only offers Excel-related software add-ons for sale, but it is also interested in distributing templates and macros you might have created. Excellent Exchange offers a free catalog and a sample demo disk for $3. Contact Excellent Exchange, Heizer Software, 5120 Coral Court, Concord, CA 94521; (415) 827-9013. +

Earth will be destroyed in 12 minutes to make way for a hyperspace bypass.

Should you hitchhike into the next galaxy? Or stay and drink beer?

Slip the disk in your computer and suddenly you are Arthur Dent, the dubious hero of THE HITCHHIKER'S GUIDE TO THE GALAXY,™ a side-splitting masterwork of interactive fiction by novelist Douglas Adams and Infocom's Steve Meretzky. And every decision you make will shape the story's outcome. Suppose for instance you decide to linger in the pub. You simply type, in plain English:

>DRINK THE BEER

And the story responds:

YOU GET DRUNK AND HAVE A TERRIFIC TIME FOR TWELVE MINUTES, ARE THE LIFE AND SOUL OF THE PUB, THEY ALL CLAP YOU ON THE BACK AND TELL YOU WHAT A GREAT CHAP YOU ARE AND THEN THE EARTH GETS UNEXPECTEDLY DEMOLISHED. YOU WAKE UP WITH A HANGOVER WHICH LASTS FOR ALL ETERNITY. YOU HAVE DIED.

Suppose, on the other hand, you decide to:

>EXIT THE VILLAGE PUB THEN GO NORTH

In that case you'll be off on the most mind-bogglingly hilarious adventure any earthling ever had.

You communicate – and the story responds – in full sentences. So at every turn, you have literally thousands of alternatives. If you decide it might be wise, for instance, to wrap a towel around your head, just say so:

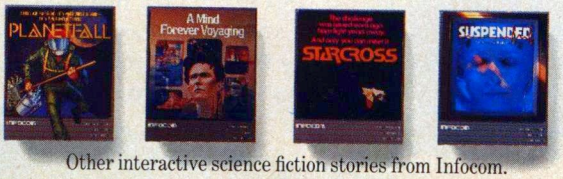
>WRAP THE TOWEL AROUND MY HEAD

And the story responds:

THE RAVENOUS BUGBLATTER BEAST OF TRAAL IS COMPLETELY BEWILDERED. IT IS SO DIM IT THINKS IF YOU CAN'T SEE IT, IT CAN'T SEE YOU.

Simply staying alive from one zany situation to the next will require every proton of puzzle solving prowess your mere mortal mind can muster. So put down that beer and hitchhike down to your local software store today. Before they put that bypass in.

Comes complete with Peril Sensitive Sunglasses, a Microscopic Space Fleet, a DON'T PANIC Button, a package of Multipurpose Fluff and orders for the destruction of your home and planet.



Other interactive science fiction stories from Infocom.

CIRCLE 225 ON READER SERVICE CARD

INFOCOM™

For more information call 1-800-262-6868. Or write to us at 125 CambridgePark Drive, Cambridge, MA 02140.

© 1985 Infocom, Inc. THE HITCHHIKER'S GUIDE TO THE GALAXY is a trademark of Douglas Adams. PLANETFALL, STARCROSS and SUSPENDED are registered trademarks. A MIND FOREVER VOYAGING is a trademark of Infocom, Inc.

COVER STORY BY GARY B. LITTLE

Put your Tur

I've heard it said on more than one occasion that the Apple IIe is the "Volkswagen of computers." That moniker is meant to be flattering, I suppose—an indication that the IIe is sound and reliable, and that it always gets the job done.

Cynics might interpret this comment as a knock on the overall power of the IIe, however. They will argue that, like the Beetle, the standard IIe can't deal efficiently with difficult assignments (not enough horsepower), doesn't have enough memory for serious applications (not enough leg room), and doesn't have enough disk capacity (the gas tank is too small).

To varying degrees, all these criticisms are justified. After all, the standard IIe is not too different from the first disk-based Apple II, sold in 1978. In those days, the II was the most powerful computer in its class. Other computers have since overtaken it by incorporating more powerful microprocessors, higher-capacity disk drives, and more memory.

Fortunately, the IIe has something the Beetle never had: expansion slots! By plugging peripherals into these slots, you can dramatically improve

PHOTOGRAPHY BY CARTER DOW

Apple II into high gear, and bocharge!

the performance of the IIe and transform your system into a state-of-the-art computer.

In this article I'm going to look at three types of peripherals you can use to soup up your IIe: speedup cards that improve raw processing power, memory cards that provide added workspace for complex application programs and that emulate disk storage devices, and high-capacity disk drives that speed up disk input/output (I/O) operations and make dealing with large files and large numbers of files more convenient.

Speedup Cards

A speedup card is simply a self-contained computer system—the card contains a microprocessor, RAM, and a control program in ROM. All you really need to operate it are a power supply, a clock signal, and I/O devices; it borrows these resources from the IIe as soon as you turn the system on.

The microprocessor used by the three most popular speedup cards—Titan's Accelerator IIe, McT's Speed-Demon, and Applied Engineering's TransWarp—is a 65CO2 running at a speed of 3.6 MHz. This is the same microprocessor used by the IIe, so the speedup card can run the same programs as a standard IIe. But since the processor ticks along at 3.6 MHz, rather than the standard 1 MHz of the IIe, many programs will run more than three times as fast as they would without benefit of the card.

In practice, the actual performance ratio is somewhat less than 3.6 MHz, for two reasons. First, speedup cards must slow down to access peripherals, such as disk drives, which are operated by programs that depend on a 1MHz clock speed. The software drivers for the Disk II and the Unidisk 3.5 disk drives are two such programs. Even if the card doesn't have to slow down (it doesn't for a hard disk), the mechanical speed of the drive prevents the effective data-transfer rate from increasing much.

Second, most speedup cards do not accelerate the execution of programs that operate in the auxiliary-memory area of the IIe (the memory on the Extended 80-Column Text Card)—the only exception is the TransWarp card. This means that a program such as AppleWorks, which uses auxiliary memory extensively, will not run much more quickly than it would without the card. This is unfortunate because most of the new programs for the IIe take advantage of auxiliary memory.

Using the TransWarp card with AppleWorks is a real treat, however. Spreadsheet recalculations are easily three times as fast as they are without the card, deletions of blocks of text in the word processor take place much more rapidly, and so on. If you have modified AppleWorks to work with extremely large files (we'll see how to do that later in this article), you will almost certainly want to use TransWarp.

An example of the dramatic effect of using TransWarp with a program that runs in auxiliary memory is shown in figure 1. The first entry in the figure indicates the times required to compile an extremely large program using the Merlin Pro assembler; the unbracketed times were measured with the TransWarp disabled and the bracketed ones with it enabled. As you can see, the standard assembly process using a ProFile hard disk was 560 seconds—just over nine

Speed up your Apple II with accelerator cards, memory cards, and disk drives.

▸21

FREE? DISKETTES

SAVE MONEY! Apple II series users can use the diskette flip side, if another "write enable" notch is correctly made.

TOP NOTCH by QUORUM quickly SOLVES that PROBLEM.

It's like FREE DISKETTES!

- Stainless Steel Guide
- Easy Leverage Handle
- Clippings Catcher
- Square Notch Cut
- Black Finish

Lifetime Warranty

Awarded the only A+ GRADE in a comparison test published by the INTERNATIONAL APPLE CORE. "The best I've found. . ." IAC Reviewer

Certifix™

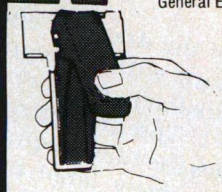
BE SAFE! The flipside of a single sided disk may have flaws. Any disk is CERTIFIED 100% ERROR FREE with CERTIFIX. IT "LOCKS OUT" BOTH DOS 3.3 & ProDOS DISK FLAWS.

- LOCKS OUT ProDOS & DOS 3.3 FLAWS
- SAVES STATUS REPORT ONTO DISK
- AUTOMATIC ProDOS/3.3 FORMATTING
- CREATE 40 trk DISKS & SYSTEM MASTER
- RECORDS TEST DATE onto disk
- NOT COPYPROTECTED

FREE CERTIFIX BONUS PROGRAMS
- Undelete DOS 3.3 files
- Test and Adjust Disk Drive Speed

Prevent Data Loss!
CERTIFY & FIX every disk with CERTIFIX!

Get THE BEST! Ask our Customers;
U.S. National Bureau of Standard
TRW • IBM • Digital Research • AT&T
U.S.Naval Weapons Research Center
Alcoa • Rockwell International
General Electric Corporation



FREE!
64 Write Protect Tabs
32 Diskette Labels
If you get the DISKETTE FLIP-KIT which contains TOP NOTCH and CERTIFIX

100% Money Back Satisfaction Guarantee!

DISKETTE FLIP-KIT only $29.95
TOP NOTCH is $14.95
CERTIFIX is just $24.95
Add $2 s/h • CA add 6.5% tax

For your nearest dealer or to order direct:
CALL TOLL FREE
1-800-222-2824
In CA: 1-800-222-2812
From 8 am - 5 pm PST

Dealers Invited

QUORUM INTERNATIONAL, Unltd.
INDUSTRIAL STATION P O BOX 2134 AP
OAKLAND CA 94614

CIRCLE 223 ON READER SERVICE CARD

minutes. With the TransWarp enabled, that time was reduced to 222 seconds, for a performance ratio of 2.52. If you eliminate disk I/O by assembling from a RAMdisk, the ratio improves to 2.74.

A speedup card is particularly useful with graphics-intensive programs like the program-selector utilities Catalyst and MouseDesk. No more will you watch as a graphics window scrolls by at a snail's pace.

One final note on speedup cards: they work just fine in slot 3 on the IIe. (Slot 3 generally takes the 80-column video display card on the II Plus.)

Memory Cards

Another way to beef up your IIe is to add more memory to it. Programs can use the extra memory for several purposes, the most popular of which are increasing the program workspace, creating a simulated-disk storage area (called a RAMdisk), and speeding up disk-read operations (disk caching).

I will be looking at two different types of memory cards you can use for these purposes: I/O-slot cards and auxiliary-slot cards.

An I/O-slot card is one that is compatible with the 1-megabyte (1M) Apple Memory Expansion Card introduced last September. You can plug the I/O-slot card into any expansion slot (except slot 3). Compatible products are AST Research's SprintDisk, Cirtech's Flipster, and Applied Engineering's RamFactor. An optional "piggyback" board for the SprintDisk lets you add another 1M; RamFactor's piggyback can bring the total memory up to 16M. The RamFactor also has a battery backup option that prevents data loss for up to 12 hours after a loss of power.

An auxiliary-slot card contains 80-column video-display circuitry as well as extra memory. It plugs into the auxiliary connector, replacing the traditional 80-column text card. The four leading cards of this type are Checkmate Technology's MultiRAM RGB, Applied Engineering's RamWorks II, AST Research's MegaRamPlus, and Legend Industries' Legend E' Card. You can insert up to 1M of RAM in each of these cards. You can also add expander boards with even more memory to your system.

Let's take a look at how you can use these cards to increase the performance of the IIe.

Program Expansion

When I say "program expansion" I mean AppleWorks expansion, because it seems that everyone who buys a megamemory card uses it to enhance AppleWorks performance. We're starting to see other programs that take advantage of the extra memory, however.

AppleWorks (version 1.3) automatically uses the memory on an I/O-slot memory card to expand the AppleWorks desktop beyond the standard 55K limit. If the card contains 1M, the desktop space becomes 1.012M in size, so you can work with several large files at once. Unfortunately, AppleWorks doesn't increase the global limits on database records and word-processor lines or the maximum number of files on the desktop (12).

AppleWorks does not automatically take advantage of the extra memory on auxiliary-slot cards. Every manufacturer of such cards, however, includes a program you can use to patch AppleWorks so that it will use that memory.

Some of these patch programs also change AppleWorks in other, more dramatic, ways. The RamWorks software, for example, increases the limit on the total number of database records and word-processor lines to

	Storage Device: RAMDisk	Hard Disk	Disk II	UniDisk 3.5
Assemble a 28K file to disk with Merlin Pro	493 (180)	560 (222)	(note) (note)	573 (289)*
Save a 44-block Applesoft program	1	5	13	11
BSAVE a 36K binary file	2	8	20	17
LOAD a 44-block Applesoft program	<1	2	4	4
BLOAD a 36K binary file	1	2	6	6

*The bracketed times are for a IIe sped up by a TransWarp card.

Figure 1: Performance benchmarks for the IIe; all times are in seconds.

more than 15,000 (the standard limits are 1350 and 2250, respectively). MultiRam software allows about 23,000 database records and 5000 word-processor lines; the AST Mega-RamPlus software allows about 1350 database records and 2250 word-processor lines.

This means that you can use AppleWorks to create enormous databases and documents. Of course, the larger the document, the longer it takes to manipulate it, so you may want to use a speedup card in conjunction with the AppleWorks expansion programs. In addition, you really need a high-capacity disk device to store such files. Although both RamWorks and MultiRam allow you to save large files across multiple floppy disks, the storage process is awkward and time-consuming.

RAMdisks

A RAMdisk is an area of memory in which data is stored in the same format as on a disk drive. The big difference between the two types of storage is that when you want to read from or write to the RAMdisk, the data transfer occurs at the full speed of the processor. No longer do you have to wait for slow, mechanical disk drives.

The speed increase in operations when using RAMdisks is dramatic. Figure 1 shows benchmarks for some common disk operations such as saving and loading files. Notice that saving a 36K binary file to a RAMdisk takes one-tenth the time of saving it to a standard floppy disk. Other operations are just as rapid.

One inconvenience of using a RAMdisk is that you first have to transfer your files to it, using a program like Filer or System Utilities. This takes time, so you may want to avoid using the RAMdisk if you will only be using your program for a short time.

If you use a RAMdisk, you must remember that anything you store on it is lost forever if you turn off the Apple. For this reason, you may prefer to store only programs on it and use regular disks for data that you will change.

You can use every I/O-slot and auxiliary-slot memory card as a RAMdisk. The driver software is kept in ROM for the I/O-slot cards; you must load it from disk for the auxiliary-slot cards.

The RAMdisk for an I/O-slot card is quite easy to use because the disk

ACCELERATOR CARDS

Accelerator IIe
Titan Technologies, Inc.
310 West Ann Street
Ann Arbor, MI 48104
(313) 662-8542

Price: $319
System Requirements: Apple II, II Plus, or IIe
65C02 processor. 3.6 MHz. One-year warranty. Increases processing speed up to 3½ times. Includes 80K of high-speed RAM.

SpeedDemon
McT
1745 21st Street
Santa Monica, CA 90404
(213) 829-3641

Price: $189; upgrade of earlier version, $75
System Requirements: Apple II, II Plus, or IIe
65C02 processor, 3.5 MHz. 3-year warranty. Low static sensitivity and built-in self test. Has been shipping for 3½ years.

TransWarp
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 241-6060

Price: $279
System Requirements: Apple II Plus, IIe, Franklin, or Laser 128
65C02 processor, 3.6 MHz. 5-year warranty. Speeds up main 64K, ROM, and auxiliary memory on IIe.

HARD-DISK DRIVES

A2i-350-10- and -20-NovoComp
CMC Computer Systems
1514 E. Edinger, Suite H
Santa Ana, CA 92705
(714) 835-2462

Price: 10MB, $945; 20MB, $1145
System Requirements: Current-model Apple IIe case
Internal hard disk replaces power supply. 90-day warranty. Auto-boots directly from hard disk. Runs ProDOS, DOS 3.3, CP/M, and Pascal. ProDOS-only version available at lower price.

AST-2000
AST Research, Inc.
2121 Alton Avenue
Irvine, CA 92714
(714) 476-3866

Price: 20MB with 20MB tape backup, $2795; 20MB drive only, $1595; 20MB tape backup only, $1695
System Requirements: Apple IIe
6-month warranty. High-performance SCSI hard-disk and tape subsystem.

MicroStor
AST Research, Inc.
2121 Alton Avenue
Irvine, CA 92714
(714) 476-3866

Price: 10MB with 10MB backup, $1995
System Requirements: Apple II Plus, IIe
6-month warranty. Hard-disk and cartridge tape backup. Compatible with all Apple II operating systems.

ProAPP 20
ProAPP, Inc.
1475 S. Bascom Ave.
Campbell, CA 95008
(800) 424-2425,
(408) 559-3552

Price: $995
System Requirements: Apple IIc, IIe
20MB. 1-year warranty, 10-day money-back guarantee if not satisfied.

QC10, QC20
Quark Peripherals, Inc.
2525 W. Evans, Suite 220
Denver, CO 80219
(800) 543-7711 Sales,
(303) 934-2211 Mktg.

Price: 10 MB, $1295; 20MB, $1795; upgrade, 10MB to 20MB, $345
System Requirements: Apple IIc, IIe, III
90-day extended warranty available. Does not require special interface card.

Sider I, Sider II, B-Sider
First Class Peripherals
3579 Highway 50 East
Carson City, NV 89701
(800) 538-1307

Price: Sider I, 10MB, $695; Sider II, 20MB, $995; B-Sider, 20MB removable cartridge, $695
System Requirements: Apple II Plus (revision 7 or later) or IIe
1 year warranty.

driver is contained in ROM on the card. There is no installation program to run since ProDOS automatically recognizes the card as a disk device. Such a RAMdisk also retains its data after a warm boot (Control-OPEN-APPLE-Reset), so it's hard to lose data unless you turn off the Apple.

Another nice feature of such a card is that you can boot from its RAMdisk (with a PR#n command) if it contains the standard files ProDOS needs to boot a disk (PRODOS and a .SYSTEM file like BASIC.SYSTEM). If you're using an enhanced IIe, and the card is in a higher-numbered slot than any other disk device, you can also warm boot from the card. You cannot boot from an auxiliary-slot memory card.

It's not difficult to transform your IIe into a Formula 1 racer, capable of handling more complex chores more quickly than before.

Another advantage of using an I/O-slot memory card as a RAMdisk is that such use has become standard. Several programs, such as Pinpoint, Catalyst, and MouseDesk, recognize the RAMdisk when they start up and transfer their files to it automatically. The net result is that these disk-intensive programs operate much more quickly than they do without the card.

Disk Caching

The AST SprintDisk (and MegaRamPlus) comes with an interesting program called SprintCache that uses a method quite different from that of the RAMdisk to speed up disk operations.

When you want to read data from a real disk for the first time, SprintCache transparently transfers it to SprintDisk RAM before passing it on to your program, so the operation is actually slightly slower than usual. But the next time you ask for the data, SprintCache realizes it is already in RAM, so it bypasses the slow disk-read operation and delivers it to you from RAM at full speed. This technique is called disk caching.

SprintCache is effective with programs that read the same data files again and again. For example, after you use AppleWorks with SprintCache for a while, the disk activity associated with loading overlays stops because all the overlays are in the cache and are loaded from there instead. SprintCache is not too useful if you simply read a file once and don't use it again, however.

You may be wondering why you would use SprintCache instead of a RAMdisk program. There are two good reasons: first, you don't have to copy any files to cache memory as you would before using a RAMdisk; second, if you ever have a power outage, you won't lose any data, because write operations are not cached. The disk always contains a current copy of the file.

High-Capacity Disk Drives

We saw earlier that even with a speedup card installed, disk operations are not much faster than usual. The solution to the disk bottleneck, of course, is to use a faster type of drive—typically, a hard disk such as First Class Peripherals' The Sider, CMC's A2i-350, ProAPP's ProAPP 20, or AST Research's MicroStor or AST-2000. The hard-disk benchmarks in figure 1 were measured us-

MEMORY CARDS

Apple II Memory Expansion Card

Apple Computer, Inc.
20525 Mariani Avenue
Cuptertino, CA 95014
(408) 996-1010

Price: With 256K, $299
System Requirements: Apple II, II Plus, or IIe
Plugs into slot 4, 5, or 6. Maximum RAM 1MB. 90-day warranty.

Flipster

Cirtech (UK), Ltd.
Distributed by
Greengate Productions, Inc.
2041 Pioneer Court, Suite 15
San Mateo, CA 94403
(415) 345-3064

Price: 1 MB, $399
System Requirements: Apple II Plus, IIe, Franklin 1200, or Franklin 2000
Plugs into slots 1 through 7 (IIe, not slot 3). 1-year warranty. Memory-division software included. Patches for earlier versions of CP/M and Pascal. Compatible with Apple II Memory Expansion Card.

Legend C' Card

Legend Industries
2220 Scott Lake Road
Pontiac, MI 48054
(313) 674-0953

Price: 256K, $219; 512K, $269; 768K, $319; 1MB, $369
System Requirements: Apple IIc
3-year warranty. Gives up to 1MB AppleWorks desktop. Includes software program that allows use of mouse with AppleWorks.

Legend E' Card

Legend Industries
2220 Scott Lake Road
Pontiac, MI 48054
(313) 674-0953

Price: 256K, $219; 512K, $269; 768K, $319; 1MB, $369
System Requirements: Apple IIe
Plugs into auxiliary slot. 3-year warranty. Gives 80-column display. Compatible with all software written for Apple Extended 80-column card. Includes software that allows use of mouse with AppleWorks. Has RGB double hi-res color video and 16 levels of gray.

Legend S' Card

Legend Industries
2220 Scott Lake Road
Pontiac, MI 48054
(313) 674-0953

Price: 256K, $269; 512K, $319; 768K, $369; 1MB, $419
System Requirements: Apple II, II Plus, IIe, III, Franklin Series, and Laser 128
Plugs into slots 1 through 7. 3-year warranty. Slot independent. DOS, CP/M, Pascal, ProDOS, SOS, and disk emulators are available. Allows 1MB AppleWorks on II, II Plus, IIe, IIc, or Franklin.

MegaRamPlus

AST Research, Inc.
2121 Alton Avenue
Irvine, CA 92714
(714) 476-3866

Price: 64K, $195; 256K, $295; 512K, $445; 768K, $595; 1MB, $745
System Requirements: Apple IIe
Plugs into auxiliary slot. 2-year warranty.

ing Apple's ProFile hard disk; speeds for other drives should be similar. Notice that hard-disk read and write operations are about twice as fast as the corresponding floppy-disk operations.

Another reason to use hard disks, of course, is that they are ideal for saving large individual files as well as large numbers of files; 140K floppy disks cannot handle such tasks. Common hard-disk capacities are 5M, 10M, and 20M.

The Sider was the first low-cost hard disk available for the Apple and is still quite popular. The CMC's A2i-350 is unique in that it fits inside the IIe and replaces the system's power supply with its own power supply.

The AST drives feature a removable tape cartridge that you primarily use for making backup copies of the hard disk. The new AST-2000 can back up 20 megabytes in only eight minutes. Most other hard-drive manufacturers offer some sort of optional backup mechanism, perhaps a separate tape unit or simply a program to transfer the files to multiple floppy disks.

You should avoid the floppy-disk backup method at all costs. Remember that you need about nine 5.25-inch floppy disks to back up just one megabyte, so you will need 180 to back up 20M . . . forget it!

If you use a hard disk, you will almost certainly want to use ProDOS rather than DOS 3.3. Unfortunately, this means you must master the arcane concepts of pathnames, prefixes, and directories to locate files efficiently on the disk. Your efforts will not be wasted, however, since almost all new software being released for the IIe runs under ProDOS.

You also have to organize files carefully on the disk so they are easy to find when you want them. My advice on how to best structure a hard disk goes something like this (you can use Filer for all these operations):

1. Format the disk.
2. Copy ProDOS and BASIC.SYSTEM from floppy disk to the disk's volume directory.
3. Create subdirectories in the volume directory for each of your major applications. For example, I have subdirectories called ASM (for the Merlin Pro assembler), AW (for AppleWorks), PTP (for the Point-to-Point communications program), and U (for a group of utility programs). Notice that I've kept these names short even though they can be up to 15 characters long; this lessens my typing task when I need to enter a pathname.
4. Copy files from the floppy disk to the appropriate subdirectories.
5. Create subdirectories within each of the application subdirectories. This is where the application should store its data. For example, I have a subdirectory called AW.WORK within the AW subdirectory that holds all my *A+* articles.

My final suggestion is that you install a selector program such as Catalyst or MouseDesk (see the April *A+*), which takes control whenever you quit an application. These programs make it easy to run a program without requiring you to remember its pathname.

I prefer to use my own bare-bones selector program (shown in figure 2) because it loads more quickly than either Catalyst or MouseDesk and is easy to customize. With it, you can select a program from a menu simply by pressing a single key.

If you call this program Startup and store it in the volume directory of a disk that is structured as described above, it runs automatically every

MultiRam CX
Checkmate Technology, Inc.
509 South Rockford Drive
Tempe, AZ 85281
(602) 966-5802

Price: 256K, $199.95; 512K, $259
System Requirements: Apple IIc
Plugs into motherboard of IIc (CPU and MMU sockets). 5-year warranty. AppleWorks memory-expansion software, RAMdisk software, and RAM test utility software included with card. 65C816 processor is available.

MultiRam IIe
Checkmate Technology, Inc.
509 South Rockford Drive
Tempe, AZ 85281
(602) 966-5802

Price: $159.95 64K through $329.95 768K
System Requirements: Apple IIe
Plugs into auxiliary slot. 5-year warranty. Expands Apple 64K memory to 768K. AppleWorks memory-expansion software, RAMdisk software, and RAM text utility software included.

MultiRam RGB
Checkmate Technology, Inc.
509 South Rockford Drive
Tempe, AZ 85281
(602) 966-5802

Price: $199.95 64K through $439.95 1MB
System Requirements: Apple IIe
Plugs into auxiliary slot. 5-year warranty. RGB video output standard. Options include 10-year, battery-backed static RAM and expansion board for more than 1 MB.

RamFactor
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 241-6060

Price: 256K, $239; 512K, $289; 1MB, $389
System Requirements: Apple II Plus, IIe, Franklin, or Laser 128
Plugs into slots 1 through 7, excluding 3. 16MB RAM maximum (with expander). 5-year warranty. Battery backup option, $179; 16-bit (65C816) option, $159. Allows you to run AppleWorks on II Plus.

RamWorks II
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 241-6060

Price: 64K, $179; 256K, $219; 512K, $269; 1MB, $389; 1.5 MB, $539; upgrade, Memory Master original RamWorks, $120
System Requirements: Apple IIe
16MB RAM maximum (with expander). Optional 65C816, $159. RGB option, $129. Built-in AppleWorks print buffer; auto loads AppleWorks into RAM.

SprintDisk
AST Research, Inc.
2121 Alton Avenue
Irvine, CA 92714
(714) 476-3866

Price: 256K, $295; 512K, $445; 768K, $595; 1MB, $745
System Requirements: Apple II, II Plus, or IIe
2-year warranty. Plugs into slots 1 through 7. Compatible with Apple II Memory Expansion Card.

Z-RAM
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 241-6060

Price: 256K, $329; 512K, $389
System Requirements: Apple IIc
Goes inside IIc. 5-year warranty. 16-bit option (65802), $89. Includes Z80 processor to run CP/M software.

APPLE SOFTWARE AT LOW PRICES

The Best of Apple Public Domain Software
150-page directory of disks
☐ $6.95

Samples from our Apple II Family

Tutorials
☐ 000 BASIC tutorial $5

Art
☐ 007 Tom's Tool kit, print fonts, sizes . . . $5
☐ 023 Make drawings, paint w/colors $5

Astronomy
☐ 028 Exposures, planet locator $5

Word Processing
☐ 037 Freewriter (II+ needs paddles) . . . $5

Business
☐ 038 Budgeting, calendar, calculator . . . $5
☐ 039 General ledger, 15 financial programs, label maker $5
☐ 040 Address book, amortization $5
☐ 045 House sale calculations, payroll . . . $5
☐ 056 Check balancer w/documentation . $5
☐ 057 Omnifile database w/doc $5

Education
☐ 062 Alphabet, spelling, word games . . . $5
☐ 064 Drills: typing, spelling, states $5
☐ 065 Talking calculator, math drill, flash cards $5
☐ 066 Teaching aids: grader, averager, make and print tests $5
☐ 068 Story problems, metrics, history . . . $5
☐ 069 Geography, fractions/decimals $5
☐ 085 Elementary math drills: +,−,×,÷, 23 levels $5

Food and Nutrition
☐ 092 Count calories, nutrient values $5

Games
☐ 099 Chess, Breakout, Horse Race $5
☐ 110 Roulette, Pinball, Gammon, etc. . . . $5

Math
☐ 176 Algebra, quadratics, plotting $5

Music
☐ 186 Music Maker w/documentation $5

Passion
☐ 190/191 Graphic displays, games $10

Utilities
☐ 213 Best of utilities $5
☐ 226 Diversi-DOS — Faster than DOS 3.3 . . . . . $5
☐ 233 Debugging aid, text editor $5

Communication
☐ 260/261 Bulletin board system with documentation (2 disk set) . . $10
☐ 262 Hayes modem program & utilities $5
☐ 293 CP/M — XModem, etc. $5

SPECIAL! Any 6 disks plus Apple directory Only $33.95

Add $4 shipping for disk orders, or $2 if ordering directory only. California orders add sales tax.

Enclosed $_____ by ☐ Check ☐ VISA ☐ MC

Card no. _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State ____ Zip ____

The Public Domain Exchange
2076C Walsh, Ste 511, Santa Clara, CA 95050 • 408-496-0624


```
1  REM Copyright 1986 Gary Little
100  FOR I = 8192 TO 8192 + 219: READ X: POKE I,X: NEXT
110 SL = 6: REM Slot number of hard disk
120  POKE 8359,16 * SL: CALL 8192
130 D$ =  CHR$ (4)
140  PRINT D$;"PR#3": PRINT : HOME
200  PRINT  TAB( 25);"Directory of Programs"
250  PRINT
300  PRINT "1. Point-to-Point"
400  PRINT "2. Assembler"
410  PRINT "3. Utilities"
420  PRINT "4. AppleWorks"
450  PRINT
500  PRINT "Enter your choice (1..4): ";: GET A$: PRINT A$
600  PRINT
700  IF A$ = "1" THEN  PRINT D$;"-PTP/PTP.SYSTEM"
710  IF A$ = "2" THEN  PRINT D$;"-ASM/MERLIN"
720  IF A$ = "3" THEN  PRINT D$;"PREFIX U": PRINT D$;"CATALOG": END
730  IF A$ = "4" THEN  PRINT D$;"-AW/APLWORKS.SYSTEM"
800  END
5000 DATA173,129,192,173,129,192,162,0,189,21,32,157,0,209,
      232,208,247,173,130,192,96,216,32,0,191,204,179,16,32,0
5001  DATA 191,198,181,16,32,0,191,197,145,16,176,121,173,149,
      16,41,15,240,114,141,149,16,169,47,141,129,2,162,0,189
5002  DATA 150,16,157,130,2,232,236,149,16,208,244,169,47,
      157,130,2,232,160,0,185,186,16,240,7,157,130,2,232,200,208
5003  DATA 244,232,142,128,2,32,0,191,200,165,16,176,60,173,
      170,16,141,172,16,32,0,191,202,171,16,176,46,32,0,191
5004  DATA 204,179,16,176,38,173,130,192,32,137,254,141,12,192,
      32,147,254,32,88,252,169,207,141,88,191,169,0,162,22,157
5005  DATA 88,191,202,208,250,169,1,141,111,191,76,
      0,32,76,142,16,2,96,149,16,0,0,0,0,0,0,0,0,0
5006  DATA 0,0,0,0,0,0,3,128,2,0,17,0,4,0,0,32,255,255,0,0,1,
      0,1,184,16,1,47,66,65,83
5007  DATA 73,67,46,83,89,83,84,69,77,0
```

Figure 2: A Startup program that installs custom quit code in ProDOS

time you boot the disk. Before the program displays the menu, it installs a special quit routine into ProDOS, so control passes to it every time you leave an application. If you use the program, you have to change one variable to indicate the slot number of the hard disk: *SL* in line 110. You'll also have to change the menu entries and pathnames, of course.

A useful commercial program for coping with hard-disk-file maintenance is Central Point Software's Copy II Plus. It will draw a tree diagram of all the directories on a disk and show you how they are interconnected. To select a directory, you position a cursor over its name using the arrow keys, then press Return. What could be easier?

UniDisk 3.5

If you are more interested in extra disk capacity than disk speed, consider Apple's new UniDisk 3.5. It uses convenient 3.5-inch hard-shell disks with capacities of 800K each (more than five standard floppies). That should be enough to store most of your popular applications with room to spare for data storage. The disks are also easy to back up; that is, they are if you use a program like Copy II Plus. It takes about 6½ minutes to make a single copy.

You certainly shouldn't buy the UniDisk 3.5 for its speed. As figure 1 shows, it just isn't that much faster than the old Disk II. In fact, read operations such as LOAD and BLOAD are completed in about the same amount of time as they are with the older disk system.

Given these various options—speedup cards, memory cards, and high-capacity hard disks, you can see that it's not difficult to transform your IIe into a Formula 1 racer, capable of handling more complex chores more quickly than before. After you sit down in front of a turbocharged Apple II, you'll wonder why you didn't upgrade sooner. ✚

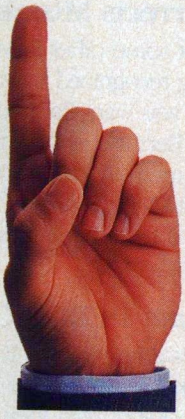
Gary Little is the author of Point-to-Point, Pinpoint's new telecommunications program for the IIe and IIc.

CIRCLE 256 ON READER SERVICE CARD

With one Hayes Transet 1000® you can do three things at once.

Think

You can keep working with your computer.



Communicate

While receiving electronic messages from your modem.

Print

While your printer is printing another job.

© 1986 Hayes Microcomputer Products, Inc.

*Manufacturer's estimated retail price.

We call it triple tasking©. Transet 1000 helps your productivity, by allowing you to perform three separate computer tasks. Simultaneously. No more waiting for one task to be completed before you can begin another. And no more wasted time!

Transet 1000 keeps working for you—even when your computer is turned off. Because it has its own independent memory, Transet 1000 can serve as an electronic mailbox. Your files and incoming messages received through your modem remain stored overnight, or whenever you're away from the office. When you return, you can print out your mail without turning your PC on. Or, read it on your PC screen and print out only selected messages. You can even read your mail from any remote PC or terminal with a modem.

Before now, you would have had to buy several add-on devices to do all this. And *that* could be costly.

But no more. Transet 1000 does it all—for a surprisingly low price. It costs only $399* for the 128K model, which stores up to 90 pages. And only $549* for the 512K version, with up to 360 pages of storage.

So wait no more. If you need this flexibility in your operation, you should have a Transet 1000. See your authorized Hayes dealer for a demonstration. Or contact Hayes for information at 404-441-1617.

Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, Georgia 30348.

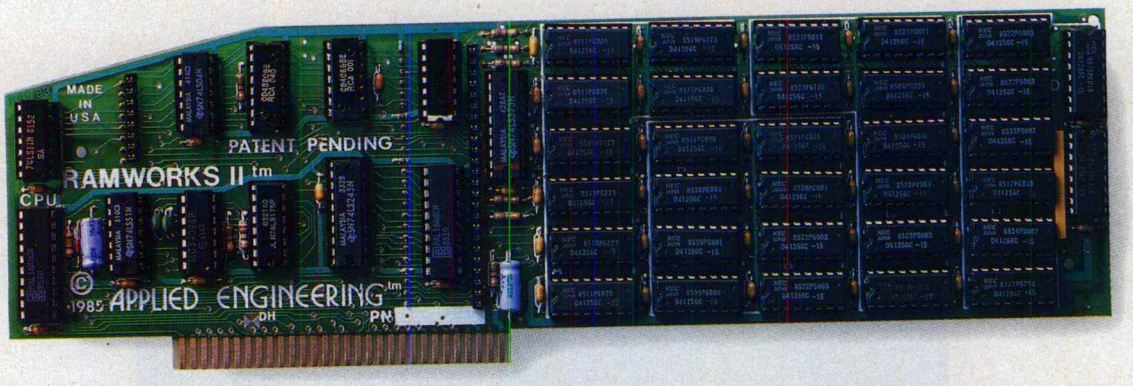
Hayes®

Say yes to the future

CIRCLE 296 ON READER SERVICE CARD

RamWorks II®

The Best Selling, Most Compatible, Most Recommended, Most Expandable Card Available.



64K to 16 MEG! RamWorks II Is Number One.

It's simple, RamWorks II sells the most because it does the most.

The AppleWorks Amplifier.

While RamWorks II is recognized by all memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks II does. Naturally, you'd expect RamWorks II to expand the available desktop, after all Applied Engineering was a year ahead of everyone else *including Apple* in offering more than 55K, and we still provide the largest AppleWorks desktops available. But a larger desktop is just part of the story. Look at all the AppleWorks enhancements that even Apple's own card does not provide and *only* RamWorks II does. With a 256K or larger RamWorks II, *all* of AppleWorks (including printer routines) will automatically load itself into RAM dramatically increasing speed by eliminating the time required to access the program disk drive. Switch from word processing to spreadsheet to database at the speed of light with no wear on disk drives.

Only RamWorks II eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 15,000. *Only* RamWorks II increases the number of lines permitted in the word processing mode from 2,250 to over 15,000. And *only* RamWorks II (256K or larger) offers a built-in printer buffer, so you won't have to wait for your printer to stop before returning to AppleWorks. RamWorks II even expands the clipboard. And auto segments large files so they can be saved on two or more disks.

RamWorks II, nothing comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks II couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, Catalyst, MouseDesk, Howard-Soft, FlashCalc, The Spread Sheet, Managing Your Money, SuperCalc 3a, and MagiCalc to name a few (and *all* hardware add on's like ProFile and Sider hard disks). RamWorks II is even compatible with software written for Apple cards. But unlike other cards, RamWorks II plugs into the IIe auxiliary slot providing our super sharp 80 column text in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

Highest Memory Expansion.

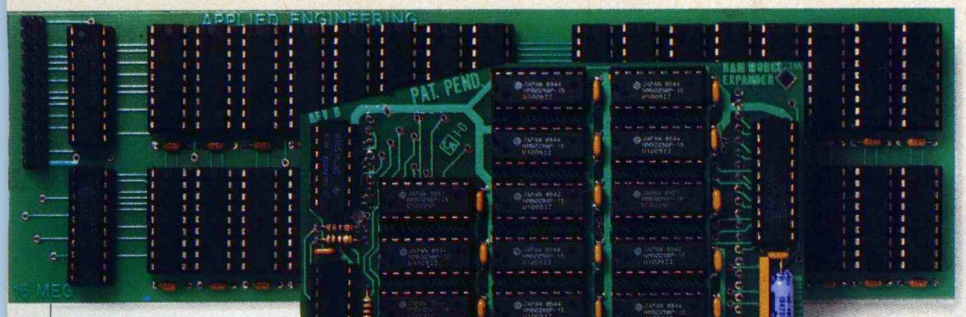
Applied Engineering has always offered the largest memory for the IIe and RamWorks II continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 meg is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks II has the widest selection of expander cards available. Additional 512K, 2 MEG, or 16 MEG cards just snap directly onto RamWorks II by plugging into the industry's only low profile (no slot 1 interference) fully decoded memory expansion connector. You can also choose non-volatile, power independent expanders allowing permanent storage for over 20 years.

It Even Corrects Mistakes.

If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks II, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks II to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks II and with good reason. Some others combine RGB output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks II RGB option offers better color graphics plus a more readable 80 column text (that blows away any composite color monitor). For only $129 it can be added to RamWorks II, giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks II RGB option is more than just the ultimate in color output because unlike others, it's fully



16 MEG Expander

512K Expander

compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks II RGB option provides both Apple standard and IBM standard RGB outputs (cables included). The RGB option plugs into the back of RamWorks II with no slot 1 interference (works on the original RamWorks, too) and remember you can order the RGB option with your RamWorks II or add it on at a later date.

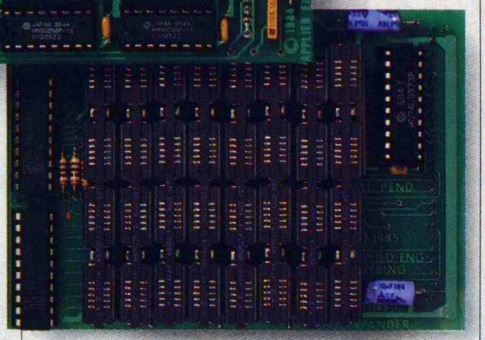
True 65C816 16 Bit Power.

RamWorks II has a built-in 65C816 CPU port for direct connection to our optional 65C816 card. The only one capable of linearly addressing more than 1 meg of memory for power applications like running the Lotus 1-2-3™ compatible program, VIP Professional. Our 65C816 card does not use another slot but replaces the 65C02 yet maintains full 8 bit compatibility.

Endorsed by the Experts.

Steve Wozniak, creator of the Apple Computer said "I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks." A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks II is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars...For my money, Applied Engineering's RamWorks II is king of the hill."

Apple experts everywhere are impressed by RamWorks II's expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIe. With a RamWorks II in your Apple, you'll make IBM PC's and AT's look like slowpokes.

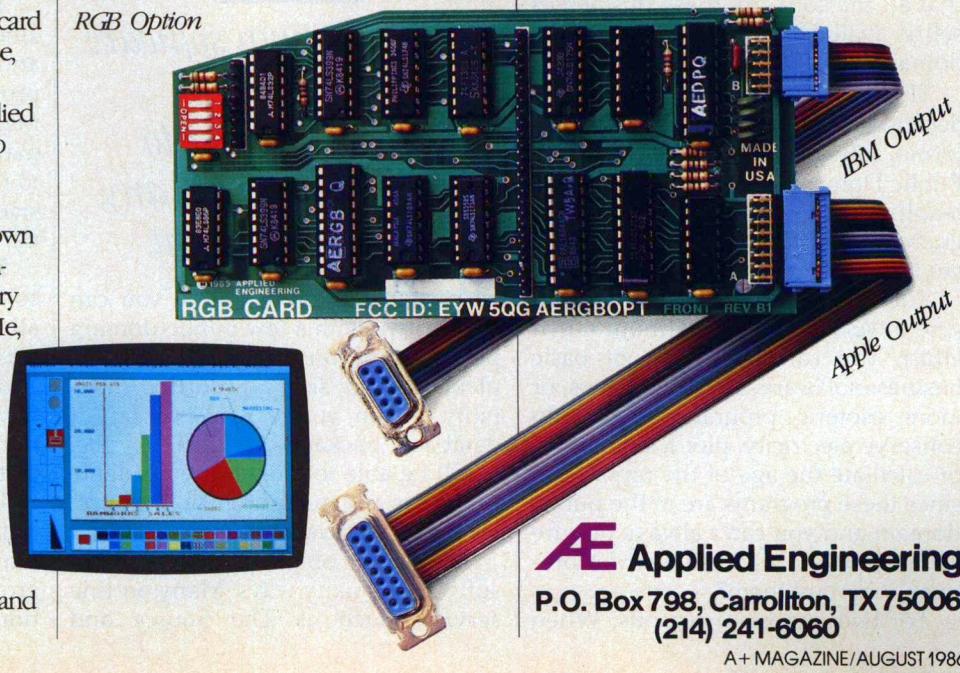


2 Meg Expander

It's Got It All

- 15 day money back guarantee
- 5 year hassle free warranty insures coverage no matter where you purchase
- Built-in super sharp 80 column display, (with or without RGB)
- Expandable to 1 MEG on main card
- Expandable to 16 meg with expander card, with NO slot 1 interference
- Can use 64K or 256K RAMs
- Powerful linear addressing 16 bit coprocessor port
- Automatic AppleWorks expansion up to 3017K desktop
- Accelerates AppleWorks
- Built-in AppleWorks printer buffer
- The only large RAM card that's 100% compatible with all IIe software

RGB Option



- RamDrive™ the ultimate disk emulation software included free
- Memory is easily partitioned allowing many programs to be in memory at once
- Compatible, RGB option featuring ultra high resolution color graphics and multiple text colors, with cables for both Apple and IBM type monitors
- Built-in self diagnostics software
- Lowest power consumption (patent pending)
- Takes only one slot (auxiliary) even when fully expanded
- Software industry standard
- Advanced Computer Aided Design
- Used by Apple Computer, Steve Wozniak and virtually all software companies
- Displays date and time on the AppleWorks screen with any PRO-DOS compatible clock
- Much, much more!

RamWorks II with 64K	**$179**
RamWorks II with 256K	**$219**
RamWorks II with 512K	**$269**
RamWorks II with 1 MEG	**$369**
RamWorks II with 1.5 MEG	**$539**
RamWorks II with 3 to 16 MEG	**CALL**
65C816 16 Bit Card	**$159**
RGB Option	**$129**
256K Upgrade	**$ 50**

RamWorks II. The industry standard for memory expansion of the Apple IIe.

ORDER YOUR RamWorks II TODAY. 9 a.m. to 11 p.m. 7 days, or send check or money order to Applied Engineering.

MasterCard, Visa and C.O.D. welcome. Texas residents add 5⅛% sales tax. Add $10.00 if outside U.S.A.

Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

SOFTWARE *BY PAUL FREIBERGER*

Cheap Thrills

A Great Selection of Public-Domain Software for Just Pennies

At a recent San Francisco computer exposition, Judy Rosenthal's software booth did a brisk business. Buyers thumbed through her catalog of Apple programs and bought disks by the dozens.

In Beverly Hills, former TV talk-show host and recording star Les Crane has started a software business, selling a collection of well-known programs on a single disk.

At first glance, neither of these commercial ventures appears unusual. They seem typical until you learn that all the software these businesses sell is available for free in the public domain.

These are not cases of commercial deception. Rosenthal's San Jose, California, software business is called The Public Domain Exchange, and Crane readily acknowledges that the programs on his Golden Oldies diskette are not proprietary.

The Apple II has attracted a treasure of such software. Without much effort, you can find disks of basic business software, amusing games, or more esoteric programs that help conserve electricity, plot a sine wave, or calculate the age of the moon. But since these programs are in the public domain and you can't always be sure of their quality, why use them? Moreover, why buy them?

For two important reasons: When you first get a computer, you may not be sure what you are going to do with it. We don't always buy computers because we need them—the reason for a purchase is usually less direct. We buy a computer because we want one and because we will use it in one way or another. Public-domain software lets you put your computer to work with little, if any, extra investment.

Second, public-domain software is instructive. Before deciding on a database-management program, you can experiment with a few public-domain programs of varying levels of complexity, speed, size, and sorting capability. When you're ready to buy a database package for serious use, you'll be able to look at the available programs and make a sensible choice.

Public-domain software lets you put your computer to work with little, if any, extra investment.

How Do You Get It?

You can obtain public-domain software in many ways. Many on-line services such as The Source and CompuServe enable users to upload and download programs.

Some magazines provide listings of software that you can type into your computer. The most useful resource for such listings is probably *Nibble* magazine, published in Concord, Massachusetts. A recent issue of *Nibble* included a fascinating icon-based program that produced films in high-resolution graphics, and a projector program that let you view your creations.

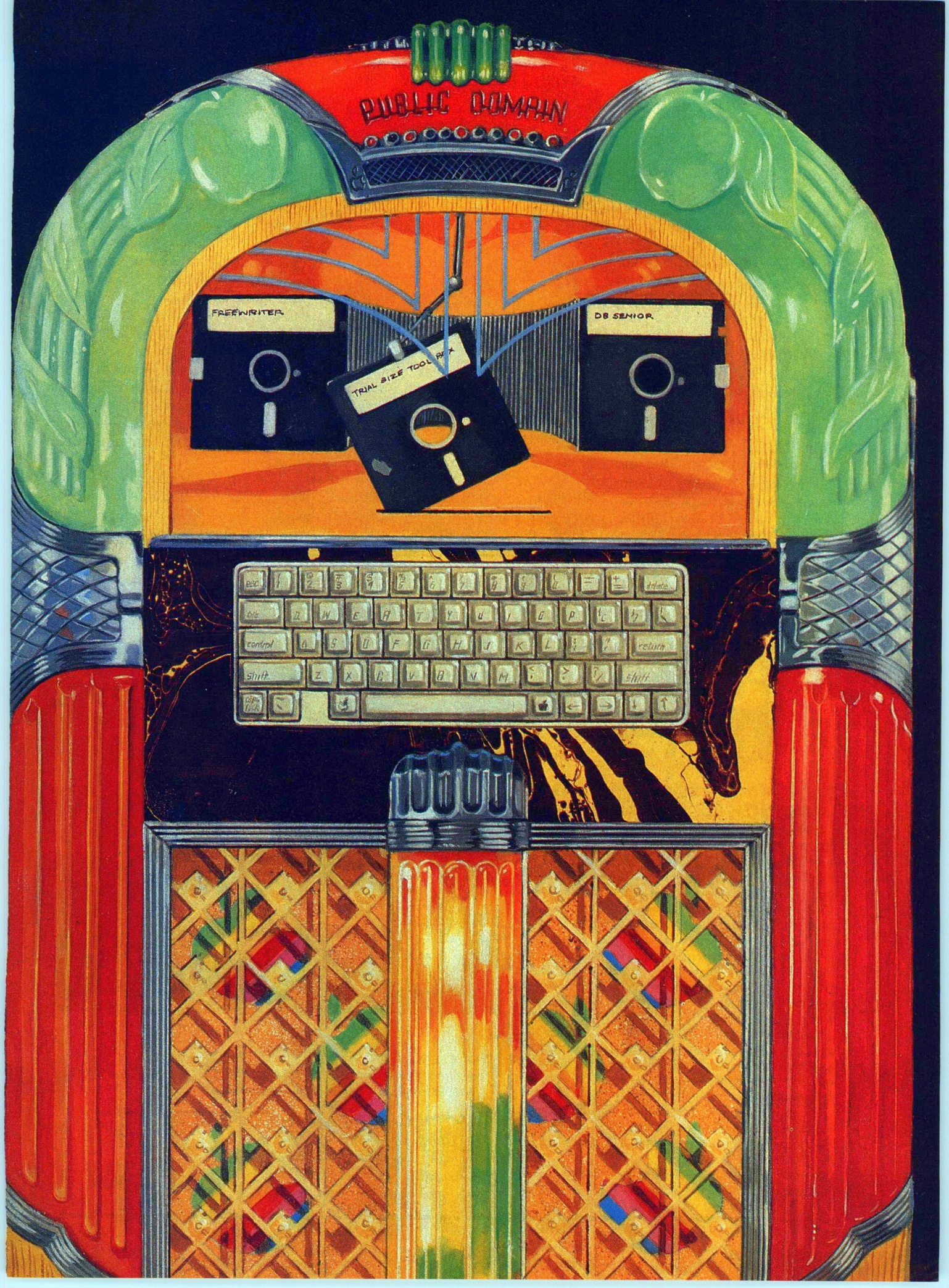
Users' Groups, Near and Far

Typing in programs from a magazine can be a pretty lonely activity, and you can't judge the quality of a program until you've used it. Few magazines offer reviews of public-domain software. One of the best ways to find the occasional gem among the stacks of public-domain software is to participate in a local users' group.

Dozens of users' groups actively solicit public-domain software. Usually the group appoints a librarian, whose job it is to catalog programs and to test them or talk to people who have done so. Most users' groups permit free sharing of all public-domain software.

Users' groups also consult other organizations that offer public-domain software. For example, most groups are in touch with the International Apple Core (IAC) of San Jose,

ILLUSTRATION BY BUNNY CARTER


PUBLIC DOMAIN
FREEWRITER
TRIAL SIZE TOOLBOX
DB SENIOR

California. The IAC publishes a regular *Apple II Public-Domain Software Library Catalog*, which lists programs by category and offers a short description of each.

You don't have to belong to a local club in order to get software from the International Apple Core. The group will gladly send you its newsletter and let you purchase its disks for $4.50 each.

The Big Red Apple Club (BRAC) of Norfolk, Nebraska, has also earned a reputation for providing informative listings of its public-domain programs. "The Big Red is the best," says Les Dyer, librarian of the Pen-Apple users' group in San Carlos, California. "They are informative and inexpensive."

Scarlett, the monthly publication of the Big Red Apple Club, is frequently more than 30 pages long and includes program listings and descriptions of the contents of disk volumes that the BRAC sells. Annual BRAC membership is $12, and members get disks at $2.50 per disk or less. Users' groups frequently obtain software from the BRAC and offer it at no charge to group members.

Public-domain software is inexpensive or free, and sometimes you get what you pay for. For example, while trying to track down a public-domain word-processing program, I came across a program that the president of a users' group had highly recommended. It processed words all right; unfortunately, it couldn't print them! When you evaluate public-domain software, you can't have the same expectations that you do when testing an expensive commercial program. Nevertheless, the vast number of public-domain programs can be a little intimidating, and, despite your efforts to research them, sometimes they aren't quite what you expected. Enter Judy Rosenthal.

Public-domain software is inexpensive or free, and sometimes you get what you pay for.

The Public Domain Exchange

Rosenthal's first software experience came with PC-SIG, a group that screens and sells public-domain software for the IBM PC. At computer shows, Apple II owners told her they needed a similar service, and she founded the Public Domain Exchange.

If you don't have time to experiment with dozens of programs to locate one that suits you, then the Public Domain Exchange may be helpful. Rosenthal has hired several reviewers who help her evaluate public-domain programs. Many of these reviews appear in the Public Domain Exchange's newsletter. The firm also has issued a book, *The Best of Apple Public Domain Software*, in which its disks are carefully categorized by topics such as Games, Food and Nutrition, Astronomy, Business, and Utilities; the book also includes a list and brief description of the programs on each disk. The disks sell for $5 apiece and usually contain 10–20 programs.

"We don't just take a disk and throw it into the library. We go to users' groups, see what we need, decide what is quality, and only then put together new disks."

In addition to selling public-domain Apple software, both The Public Domain Exchange and the BRAC offer a category of software that is not

LOCK SMITH®

BACKUP YOUR SOFTWARE WITH LOCKSMITH 6.0™.

Locksmith, the controversial copy program that took the Apple world by storm in 1981, has evolved from a powerful bit-copy programmed into a complete disk utility system, allowing the Apple user to recover crashed disks, restore accidentally deleted files, and perform hardware diagnostics on the disk drive and memory boards. The NEW Locksmith version 6.0 is now available and includes an advanced disk recovery utility, a framing-bit analyzer, an automatic boot tracer, a sector editor, many file utilities, and of course, the most powerful bit-copy program available. A fast disk backup utility copies disks in eight seconds flat. Improvements to Locksmith Programming Language have made it more powerful and easier to use for you to write your own backup and repair procedures. Includes a library disk which contains automatic procedures to copy hundreds of Apple programs.

Locksmith requires no additional hardware, but will use any additional RAM memory that it finds, including RAM boards from Applied Engineering and Checkmate Technology.

Don't get caught with your hands tied. Order Locksmith 6.0 today.

NEW LOW PRICE **$79.95**

Registered Locksmith 5.0 owners may upgrade to version 6.0 for **$29.95.**

Available from your computer dealer or directly from:

Alpha Logic Business Systems, Inc.
4119 North Union Road
Woodstock, IL 60098
(815) 568-5166

VISA

©Alpha Logic Business Systems, Inc. 1985
Locksmith and Locksmith/PC are registered trademarks of Alpha Logic Business Systems, Inc.

CIRCLE 259 ON READER SERVICE CARD

quite public domain or commercial. Personal-domain programs, also called shareware, are packages that you can obtain at little or no cost. If you find a personal-domain program useful and plan to continue using it, then you send the software author a contribution, generally about $25.

You can find all sorts of Apple II applications in the world of public-domain software. Here are a few programs that impressed me:

FreeWriter

This simple word-processing program is by Paul Lutus, author of the well-known AppleWriter program. FreeWriter is ProDOS-based, and it works best on an Apple IIe or IIc, since they have the open- and closed-apple keys. You can use it on an Apple II Plus too, with the lowercase display and a game paddle. The program employs many of the same commands that AppleWriter does—and FreeWriter prints your files, too! FreeWriter is readily available to you through many public-domain sources.

DB Senior

This program was originally developed for schoolchildren, but DB Senior is actually a handy and easy-to-learn database program. The well-written manual comes as a text file on the disk.

When you evaluate public-domain software, you can't have the same expectations that you do when testing a commercial program.

DB Senior uses a straightforward menu command structure. It sorts fields alphabetically and numerically and offers linear and binary searches. You can scroll forward and backward through records and erase records on the spot. I obtained DB Senior through the San Francisco Apple Core.

Trial Size Tool Box

This set of public-domain programs from Roger Wagner Publishing of Santee, California (known for MouseWrite), includes limited versions of the four programs—Chart 'n Graph Toolbox, Database Toolbox, Video Toolbox, and The Wizard's Toolbox—that comprise The Toolbox Series, which is available commercially ($39.95 per program). Each Toolbox is a set of commands that you can add to your own programs in an instant. For example, Chart 'n Graph Toolbox has commands for automatic axis generation and graph scaling and labeling. Database Toolbox's commands sort lists and delete arrays. Roger Wagner hopes you'll like Trial Size Tool Box so much that you'll order the commercial programs from him, but you're under no obligation to do so.

Public-domain libraries are filled with utility programs, and I found several of the Public Domain Exchange's utilities quite handy. The Disk Arranger allows you to customize your disk catalog in alphabetical order. Disk Mapping tells you where on a disk a file is located. Disk Scan searches a disk for bad sectors.

Public-domain games are available by the dozen. If you've never played Towers of Hanoi or an Eamon adventure, those are a good place to begin. A few of the classic computer games are also commonly available. Users' groups tend to modify programs, and you may not be completely satisfied

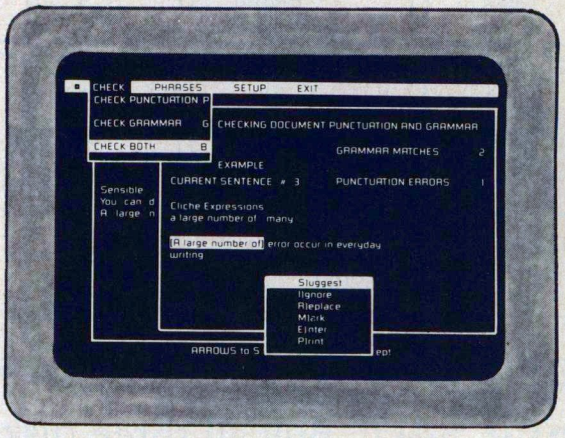
Here's How to Screen Your Grammatical Errors

Sensible Grammar saves you embarrassment and improves your credibility by helping you screen out the grammatical errors in your papers. And it's easy to use on your Apple II computer because it is AppleMouse compatible and has Macintosh-like screens.

Possible mistakes are shown to you in context, a replacement word or phrase is suggested, and you are then given the option to accept or reject the suggested correction.

Sensible Grammar does much more than catch bad grammar. It also...

- checks your capitalization and punctuation, as well as the spelling of abbreviations;
- searches out phrases that are inconcise, vague, wordy, faulty or repetitive;
- points out expressions that are informal, pompous or sexist;
- calls attention to cliches, slang and trite language;
- allows entry of your personal hackneyed expressions and then lets you know every time you use them.



Sensible Grammar™

for your Apple 128K //e and //c computer is available for $99.95.

AppleWorks Compatible!

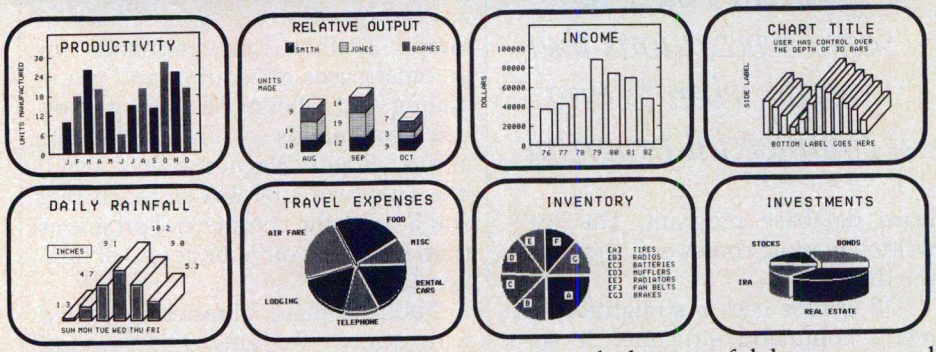
*Sensible Grammar works with the following word processors, AppleWorks, AppleWriter-ProDOS version (Apple Computer, Inc.); Format II Enhanced-ProDOS (Kensington Microware), Mouse Write text files (Roger Wagner Publishing); MouseWord (International Solutions); PFS:WRITE-ProDOS (Software Publishing, Inc.); Word Juggler (Quark Inc.); WordPerfect (SSI Software); Zardax-ProDOS (Computer Solutions) and others. Owners of trademarks indicated in parentheses.

Sensible Software®, Inc. 210 S. Woodward, Suite 229, Birmingham, MI 48011 (313) 258-5566

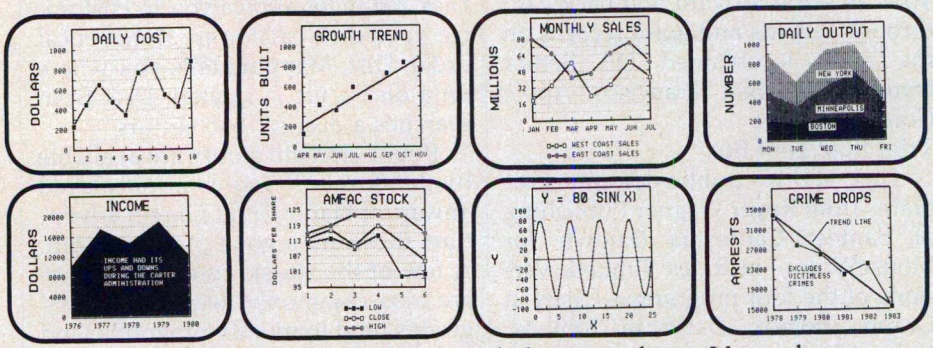
CIRCLE 227 ON READER SERVICE CARD

CHARTS! FOR THE APPLE II

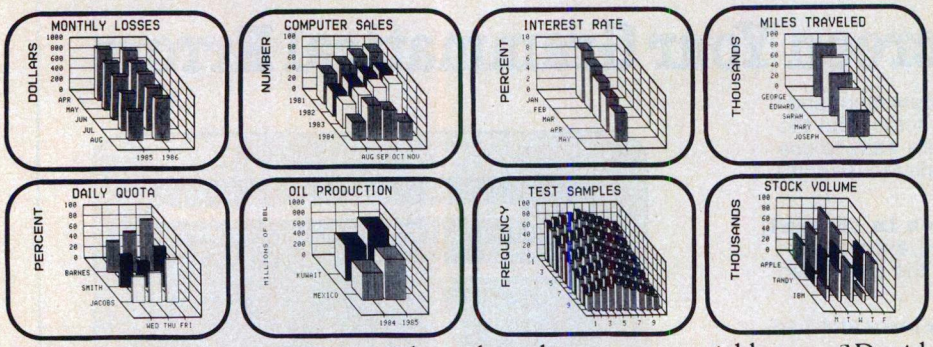
- Create charts in seconds
- Print on almost any printer



AlphaChart. 2D/3D bar and pie charts. Extras include powerful draw, type, and slide show programs. 26 chart styles. **$29.95.**



CurvePlotter. Line, area, trend, and math function charts. Up to three curves per chart, 100 points per curve. 12 chart styles. **$29.95.**



3DChart. Nothing else like it! 3D bars plotted versus two variables on a 3D grid. Up to 144 bars. 14 chart styles. **$29.95.**

Save $20! Order any two disks for $39.90.
Save $40! Buy all three disks for $49.85.

- Check/VISA/MasterCard/COD
- 3 months money-back guarantee

Or, send $3.00 for a really great demo disk and a 24 page instruction manual

800-826-2989 (Nationwide)
800-231-7316 (California)

SPECTRAL GRAPHICS SOFTWARE
6333 Pacific Avenue
Stockton, CA 95207
(209) 473-2862

CIRCLE 139 ON READER SERVICE CARD

with the version you get, however.

To correct this situation, Les Crane, who once hosted a late-night talk show in an ABC effort to dethrone Johnny Carson, has placed relatively authentic versions of several public-domain games on a disk he calls Golden Oldies, Volume 1 (see "Entertainment Classics" in this issue). The $34.95 package includes the original Adventure by Will Crowther and Don Woods; the pioneering AI program Eliza; Pong, the program that made Atari famous; and Life, a game that simulates on a computer screen the creation of the universe.

Of course, you shouldn't limit yourself to programs recommended in this article. One of the reasons for using public-domain software is to gain experience with different programs and to determine what you like. Experiment with public-domain programs. You'll be amazed at how rapidly your software library grows.

Paul Freiberger is a book author and newspaper columnist based in Palo Alto, California. With Michael Swaine he coauthored Fire in the Valley *(Osborne/McGraw-Hill, 1984).*

FURTHER INFORMATION

The Big Red Apple Club
1105 South 13th Street, #103
Norfolk, NE 68701
(402) 370-4680

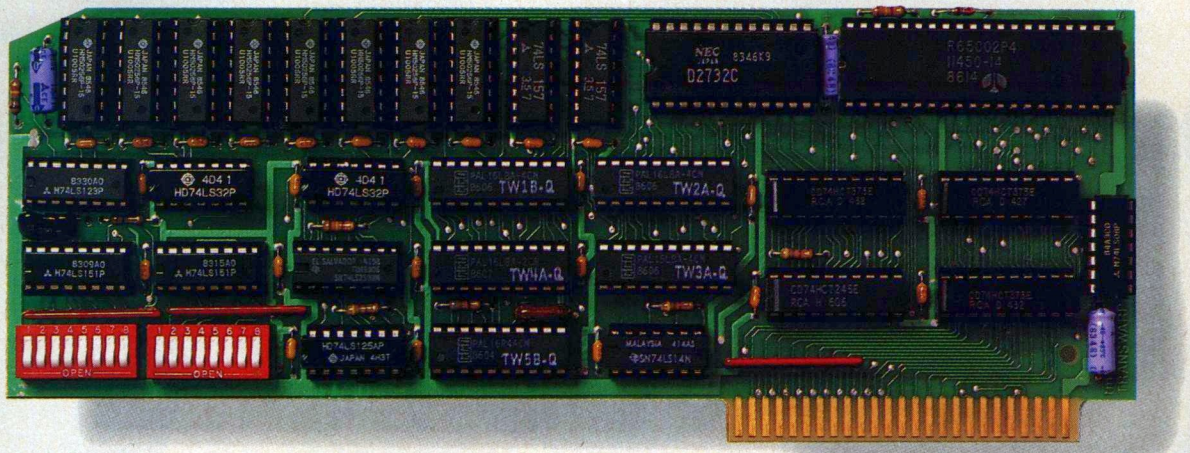
Golden Oldies, Volume 1
Software Country
270 North Canon Drive #1297
Beverly Hills, CA 90210
(213) 278-8450
Distributed by Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171

International Apple Core
Public Domain Library
908 George Street
Santa Clara, CA 95054
(408) 262-9114

The Public Domain Exchange
673 Hermitage Place
San Jose, CA 95134
(408) 942-0309

The Toolbox Series
Roger Wagner Publishing
10761 Woodside Avenue, Suite E
P.O. Box 582
Santee, CA 92071
(619) 562-3670

To boldly go at speeds no Apple has gone before.



Get TransWarp.™ The fastest accelerator you can buy for your Apple™ IIe, II, or II+.

Computing at warp speed!

It's an experience you shouldn't miss. And with TransWarp, you won't have to. Because TransWarp will run your software up to *3.6 times faster* — leaving other accelerators in the stardust!

No more waiting while your Apple™ slowly rearranges text or calculates spreadsheets. With 256K of ultra-fast RAM, TransWarp speeds up *all* Apple software — including AppleWorks, SuperCalc 3a, VisiCalc, and all educational software, graphics and games. And it's compatible with all standard peripheral cards (such as RamWorks and Apple memory cards), Profile and Sider hard disks, 3½" UniDisks, 80-column cards, modems, clock cards, mouses and more! You name it, TransWarp accelerates it. There's even a 16 bit upgrade chip available should 16 bit software become available for the Apple.

An important difference.

TransWarp's not the only speedup card on the market. But it's the only one that accelerates your Apple's main memory, ROM *and auxiliary memory.* And with more and more programs residing in auxiliary memory, buying anyone else's accelerator makes less and less sense because TransWarp speeds up software up to 3 times faster than other cards on the market because the others can't accelerate programs in auxiliary memory. That's why TransWarp is so much faster than the rest. Nearly all of today's more powerful programs run partially or completely in auxiliary memory; programs like AppleWorks, Pinpoint, Managing Your Money, SuperCalc 3a, BPI and Pascal, just to name a few. Why settle for a card that only accelerates part of memory? Get TransWarp, it accelerates all memory. TransWarp even works with most D.M.A. devices including the Swyft™ card.

There's one more difference. Since TransWarp doesn't use memory caching, you get consistent high speed performance.

A cinch to use.

Simply plug TransWarp into any slot in your Apple II, II+ or IIe —including slot 3 in the IIe. Instantly you'll be computing at speeds you only dreamed about before. And should you ever wish to run at normal speed, simply press the ESC key while turning your Apple on.

Since TransWarp is completely transparent, you won't need preboot disks or special software. It's ready to go right out of the package!

Speed = Productivity

Imagine the productivity gains you'll achieve when your programs are running over three times faster. TransWarp is so powerful, your Apple will make IBM PCs™ and even ATs™ look like slowpokes — whether you're planning taxes, plotting charts or playing games! Take a look at a few of the features that set TransWarp apart:

- 3.6 MHZ 65C02
- 256K of ultra-fast on-board RAM
- Accelerates main *and* auxiliary memory
- Low power consumption for cool operation
- Totally transparent operation with all software
- Plugs into any slot, including slot 3 on the Apple IIe
- Accelerated 16 bit option available
- Can run at full acceleration, half acceleration or normal Apple speed
- 5 year warranty

Satisfaction guaranteed!

Give *your* Apple the TransWarp advantage. With our risk-free 15-day money back guarantee, you have nothing to lose but wasted time. Call today!

TransWarp Accelerator $279
16 bit upgrade (may add later) $89

For fast response:

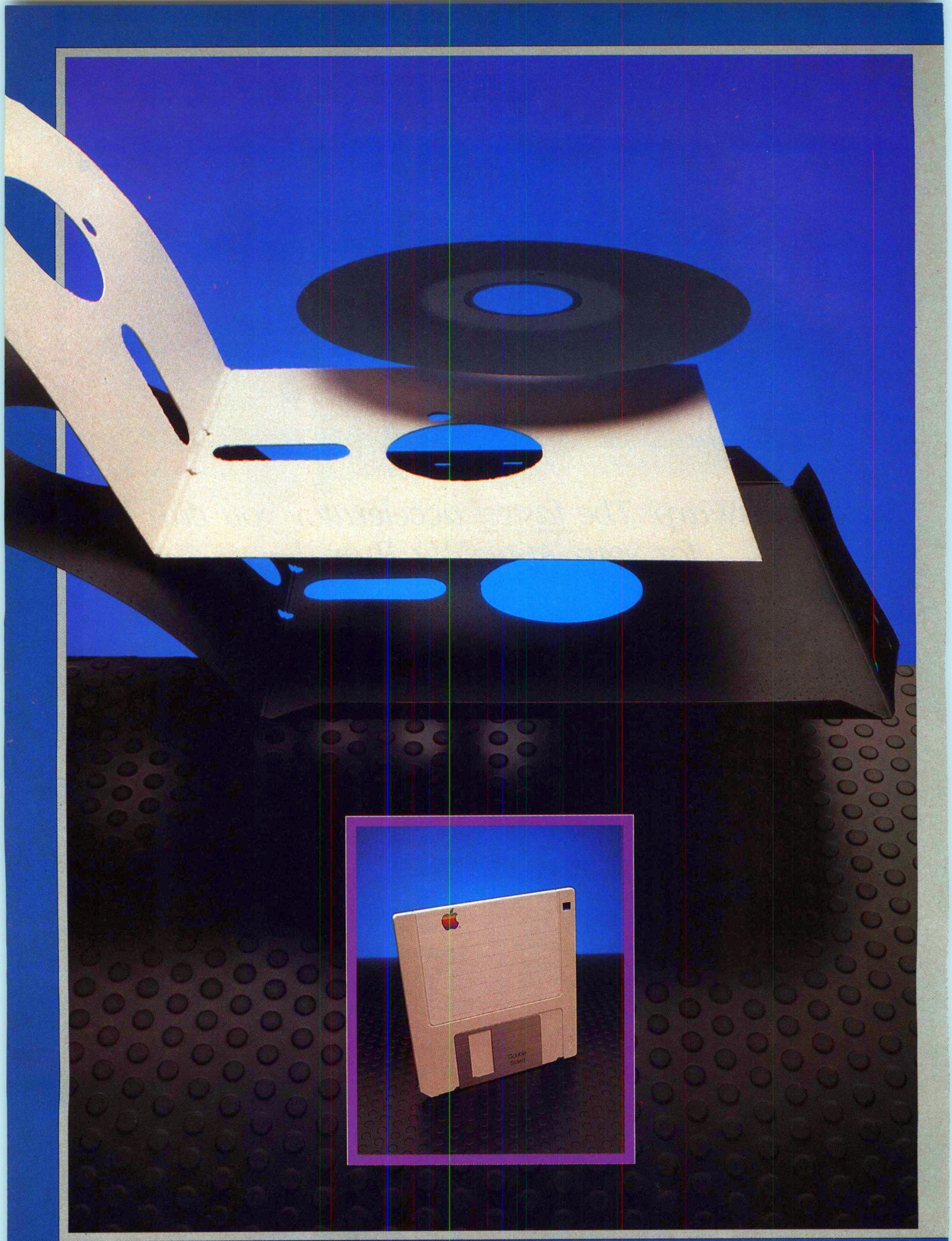
Call Applied Engineering, 9 a.m. to 11 p.m., 7 days at (214) 241-6060. MasterCard, VISA and C.O.D. welcome. Texas residents add 5⅛% sales tax. Add $10.00 if outside U.S.A.

Or mail check or money order to Applied Engineering, P.O. Box 798, Carrollton, TX 75006.

APPLIED ENGINEERING™

The Apple enhancement experts.

P.O. Box 798, Carrollton, TX 75006 (214) 241-6060



PHOTOGRAPHY BY RICHARD BELCHER

Everything you need to know about diskette care

Diskette Primer

Diskettes are one of the most vulnerable components of your computer system. An understanding of floppy diskettes and their care will help keep your Apple running smoothly.

You can find some information about diskette care on the jacket backs of most 5¼-inch floppies or in the diskette box. This article will provide a more detailed look into proper diskette maintenance.

General Precautions

Diskettes are somewhat sensitive to temperature and humidity. When the humidity gets too high, moisture can gather on their surfaces. A very cold or hot disk can contract or expand and may destroy data in the process. Most floppy disks should be kept between freezing (0° C/32° F) and warm (38° C/100° F) and between 10% and 90% relative humidity. Thus, it is not a good idea to leave floppies inside a car.

Although your diskettes are often called floppies, you should not bend them. (The term *floppy* in this context refers to the interior plastic, as opposed to the material of a hard disk). Be especially careful not to bend your disks when inserting or removing them from a drive.

Always hold a 5¼-inch diskette by its outer jacket. Never touch the oval "windows" that are open to the internal disk medium. A fingerprint, even from a clean hand, can destroy significant amounts of data. The 3.5-inch diskettes have a metal shutter that protects the internal medium. Something as small as a smoke particle can damage data on a diskette.

Write-Protect Notch

All 5¼-inch floppy diskettes come with a small rectangular notch in the upper right-hand corner—similar to the knockout tab on video and audio cassettes—that determines whether or not the drive can write onto the diskette. If this hole is covered on a 5¼-inch diskette, a properly functioning drive will not write to it or format it and accidentally destroy important data. Unfortunately, with an 8-inch diskette, you cover the hole in order to write to the diskette and uncover it to protect it, which can cause confusion for people used to working with 8-inch drives on older computer systems. With 3.5-inch diskettes, you open a slide tab over a hole to write-protect the diskette.

You should write-protect all your important programs. Although this precaution protects diskettes from erasure by a properly functioning drive, diskettes still can be erased by a malfunctioning drive, a magnet, or proximity to the bell of a ringing telephone.

Any time you obtain a new application program, the first thing you should do is write-protect it to make sure that you don't accidentally erase your only copy of a brand-new program. (Most programs come pre-write-protected, however, and you won't need to protect them.)

Diskette Lifespan

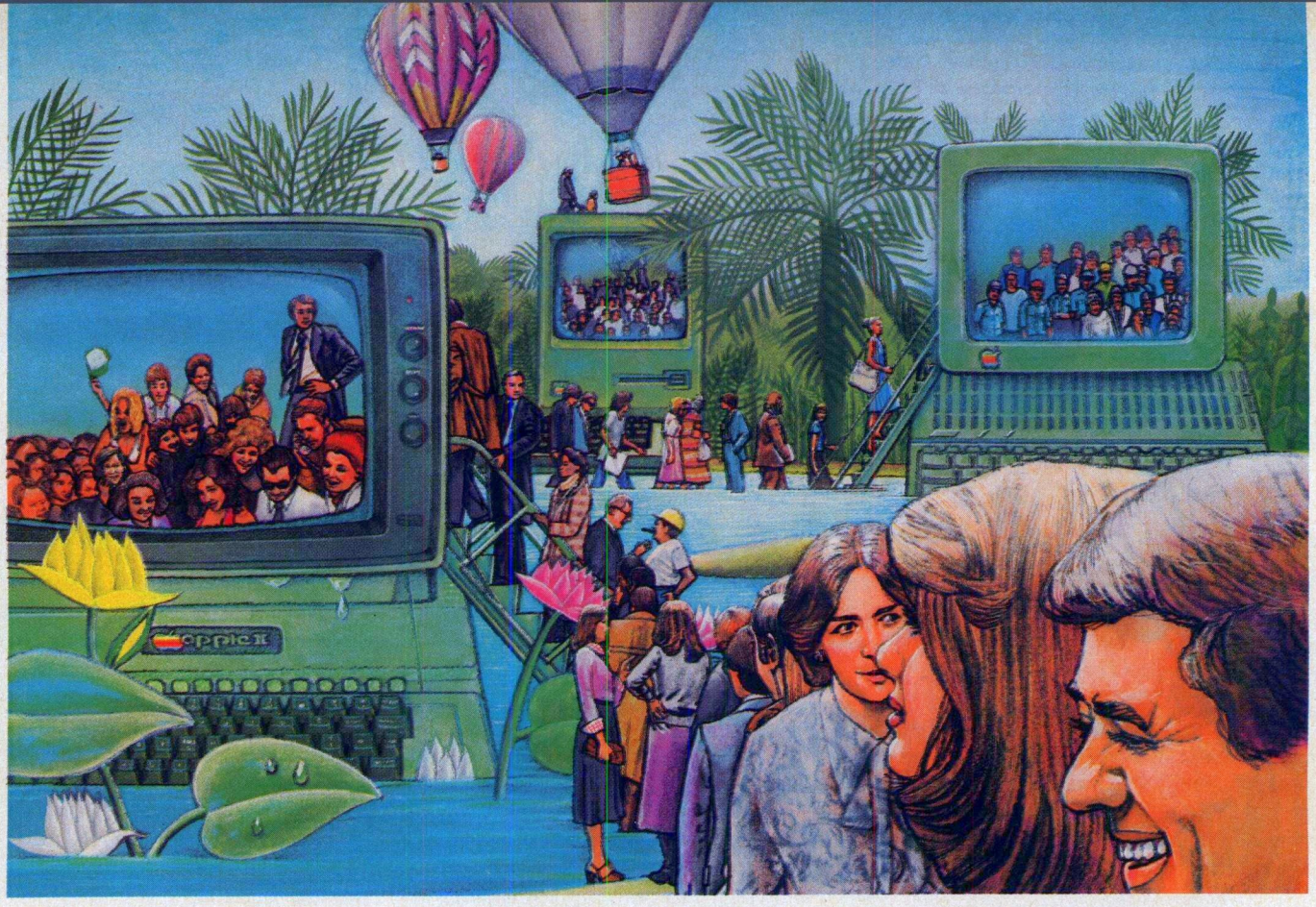
Most diskettes last at least 40 hours—not 40 hours of ownership or of use, but 40 hours of reads/writes. Since a diskette needs to be read or written to for only a tiny fraction of the time it is in the drive, this lifespan translates to a worst case of having to replace your diskettes once a month (if the diskettes are in a heavy read/write situation such as that of a bulletin board) or a normal case of six months to two years (for normal day-to-day applications).

Make sure that you always have backup copies of important diskettes to protect you from diskette failure. You should back up programs and data you use frequently, and very important data should be backed up daily. Programs and data you use less frequently and diskettes for starting up your system need fewer backups. If you're in doubt about the health of a diskette, you can determine whether or not you can reuse it by running a media-check program. Such programs often come on copy-program diskettes, and you can also find them through some users' groups. If a diskette has too many hard errors, throw it away. If a dead diskette has a "lifetime" warranty (or a 20-year warranty, which is effectively the same thing) and you think it's worth it, you can return the diskette to the manufacturer for replacement.

Labeling Tips

When labeling your 5¼-inch diskettes, avoid writing directly on the diskette's label. If you must write on the label, use a soft-tip felt pen. *Never* use a ball-point, hard-tipped pen, or pencil. You can easily put a crease in the diskette or leave graphite particles inside the jacket, which will affect the diskette's performance. Most boxes of diskettes come with self-adhesive labels on which you can write with whatever you wish (you can even type the labels or print them out on your printer). You then stick them over the manufacturer's label. If you

KEEP DISKETTE IN JACKET WHEN NOT IN USE.



USE THE BRAINS YOUR APPLE WASN'T BORN WITH.

Right at your fingertips in CompuServe's Apple® Forums.

Join the CompuServe **Apple II and III Forum** to swap everything from tall tales to short cuts with other users, and explore thousands of classic programs stockpiled since 1979.

Swap programs and files with fellow Mac owners in our **Macintosh® Users Forum.** Questions? You'll get answers from the experts here!

Visit the **Macintosh Developers Forum.** Get updates to the "Inside Macintosh Software Supplement." Interact with the Mac "team" in Cupertino.

The **Apple User Groups Forum,** supported by Apple Computer, unites officers of Apple user groups—"ambassadors" for hundreds of thousands of Apple-active enthusiasts worldwide.

Easy access to free software.

- *Download First-rate, non-commercial, user-supported software and utility programs.*
- *Take advantage of CompuServe's inexpensive weeknight and weekend rates (when Forums are most active, and standard online charges are just 10¢ a minute).*
- *Go online in most major metropolitan areas with a local phone call.*
- *And receive a* ***$25.00 Introductory Usage Credit*** *with purchase of your CompuServe Subscription Kit.*

Information you simply can't find anywhere else.

Use the Forum *Message Board* to send and receive electronic messages, and pose specific questions to Apple owners.

Join ongoing, real-time discussions in a Forum *Conference*—with Apple luminaries like Bill Atkinson, Doug Clapp, Dan Cochran, Jean-Louis Gassee, Mark Pelczarski, John Sculley and Steve Wozniak.

Search Forum *Data Libraries* for free software, user tips, transcripts of previous CompuServe online conferences and more.

Enjoy other useful services like:

- ***Popular Computer Magazines***—*electronic editions, for your reading pleasure. Including* ***Apples Online,*** *which reprints articles from leading user group newsletters nationwide and other Apple-related publications.*
- ***Other CompuServe Forums***—*supporting Jazz™ and other LOTUS® products. Microsoft®, MicroPro®, Borland International,® Ashton-Tate® and other software. Also Pascal, Basic, C, Forth, Assembly and other programming languages.*

All you need is your Apple computer and a modem . . . or almost any other personal computer.

To buy your Subscription Kit, see your nearest computer dealer. Suggested retail price is $39.95. To receive our free brochure, or to order direct, call 800-848-8199 (in Ohio, call 614-457-0802). If you're already a CompuServe subscriber, type GO MAUG (Micronetworked Apple Users Group) at any ! prompt to see what you've been missing.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220

800-848-8199

In Ohio, Call 614-457-0802

An H&R Block Company

CIRCLE 271 ON READER SERVICE CARD

want to replace an old label, don't just put the new label over the old one; remove the old one first. Never use an eraser on a diskette label, because the eraser particles can get into the diskette jacket. The 3.5-inch diskettes have a more durable hard-plastic case, so you can write on them directly.

Always label your diskettes. As a general rule, when I label diskettes, I put the title of the program(s), the format (DOS, ProDOS, UCSD Pascal, CP/M, word-processing data, and the like), date of original use, an ID number, and a comment. Indicating the operating system is important because you usually cannot read a diskette from one operating system into another without using a translation utility.

Storage

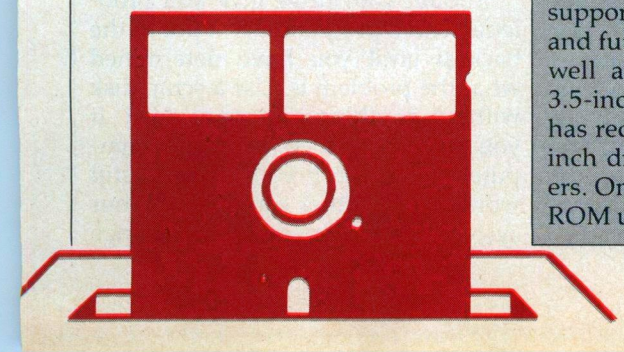
After you are finished using your diskettes, you have to find them a good place to rest until their next use. An old cardboard box filled with newspapers may make a puppy happy, but you have to treat diskettes differently. Always return 5¼-inch diskettes to the jackets they came in, which helps prevent dust, your diskette's number 1 enemy, from gathering on the magnetic media. Store them vertically if possible, to avoid crushing the one on the bottom or bending them accidentally. Don't squeeze too many diskettes into too little room.

Choose the diskette-storage place with care. Make sure nothing can spill into it and that no one can tamper with the diskettes. *Do not* store your diskettes near your computer's monitor, a television set, audio speakers, a telephone, or any magnets. Magnetic fields can erase diskettes, whether or not they are write-protected!

If you must send diskettes by mail, prevent bending by using a special floppy-diskette mailer available at computer and office-supply stores or by taping the diskette jacket to a piece of cardboard, covering the cardboard with bubble-pack if possible, and placing it in a foam-lined envelope. Label the outside of the envelope in large letters: DO NOT FOLD OR EXPOSE TO MAGNETIC FIELDS OR X-RAYS. MAGNETIC MEDIA ENCLOSED. Make sure you have a backup copy, just in case the diskette gets lost or damaged. If you don't have a piece of cardboard handy or want better protection for your diskettes, you can make a diskette mailer out of an extra diskette box. Cut the box with a pair of scis-

STORE AT
10°–25°C
50°–125°F

INSERT
CAREFULLY



THE UNIDISK 3.5

The Apple UniDisk 3.5 is Apple Computer's 3.5-inch drive for the Apple II. (Make sure that you do not confuse the UniDisk 3.5 with the UniDisk 5.25.) The UniDisk 3.5 is basically a double-sided version of the 3.5-inch drive used by the II's cousins in the Macintosh world for the last two years. Since it is manufactured by Apple, many software vendors make programs that work with it. Many software packages say, "Comes in both 5¼-inch and 3.5-inch formats," and some software manufacturers provide their programs on 3.5-inch diskettes on request.

The UniDisk is compatible with both ProDOS and Pascal 1.3. It cannot work off the shelf with earlier versions of Pascal, CP/M, or DOS 3.3, however. Several third-party manufacturers have written drivers to make the UniDisk compatible wih DOS 3.3, though. The 3.5-inch diskette is technically more sophisticated than the 5¼-inch floppy. It uses a hard outer shell with a protective shutter that helps protect the information on the diskette. Since it uses a very-high-density, high-quality recording surface, a 3.5-inch diskette can also store much more data and store it more reliably than a 5¼-inch floppy can. UniDisks can store 800K on a diskette (400K per side), and you can get programs that let a UniDisk read a diskette made on a Macintosh, and vice versa.

Apple Computer is putting a lot of support behind the 3.5-inch format, and future products in the Apple II as well as Macintosh series will have 3.5-inch drives built in. In fact, IBM has recently announced optional 3.5-inch drives for its PC-series computers. On the Apple IIc, you may need a ROM upgrade to use the UniDisk; the upgrade is available for free from your dealer when you purchase a UniDisk. The simple way to tell if your IIc needs an upgrade is to enter BASIC and type PR#7. If the system crashes or attempts to boot the external drive, then you need the upgrade. If the system says something like AppleTalk not connected, then your IIc is already upgraded. The UniDisk plugs into the external-drive port on the IIc, and you can use the expansion port on the back of the UniDisk to plug in an external Disk IIc or another UniDisk.

With the Apple II Plus and IIe, you need to purchase a UniDisk controller card ($69 retail), which the UniDisk plugs into. The UniDisk 3.5 controller card can control up to 127 devices, but with the existing power supply and operating system you can only use two UniDisk drives. If you need more storage space than two UniDisks, then you need a hard-disk drive, which is less expensive.

Many people ask, "Why should I buy a UniDisk when I could buy a hard-disk drive for only a couple of hundred dollars more?" The answer is that the 3.5-inch diskette medium is removable and storable. You can mail, file, and easily back up a 3.5-inch diskette. In fact, the UniDisk makes an excellent backup device for a hard-disk drive. It takes 65 5¼-inch diskettes to back up a full ten-megabyte hard-disk drive and only 12 3.5-inch diskettes to back up the same drive. In addition, since Apple supports the 3.5-inch format, a lot of software is, or will be, available in the 3.5-inch diskette format. For the foreseeable future, software manufacturers will still offer software on 5¼-inch floppies, but the 3.5-inch diskette is the medium of tomorrow.

TIPS ON BUYING DISKETTES

Hundreds of different styles of diskettes are available, but Apple computers mainly use three types of diskettes. Apple II, II Plus, IIe, IIc, and III computers that use 5¼-inch disk drives use 5¼-inch single-sided, single-density diskettes.

Apple II-series computers that use the newer UniDisk 3.5 drive require 3.5-inch double-sided diskettes, and Macintosh-series computers use either 3.5-inch single-sided diskettes (400K storage capacity) or 3.5-inch double-sided diskettes (800K storage capacity) that are the same as those used in the UniDisk 3.5. If your computer system includes more than one disk-drive model, you may need to use a different type of diskette for each drive.

Here are some of the terms you will see when buying diskettes:

Single-Sided/Double-Sided (SS/DS)

These terms refer to the number of sides a drive uses. Some drives use only one side of floppy disks; others use both. Typical Apple Disk II-compatible 5¼-inch drives are single-sided drives, but some third-party 5¼-inch drives are double-sided.

Single Density/Double Density/Quad Density (SD/DD/QD)

These designations refer to how much data you can safely store on a 5¼-inch diskette. All Apple II 5¼-inch diskettes are single-density diskettes.

3.5-Inch/5¼-Inch

These measurements refer to the diameter of the diskette, which should be quite evident from the size of the box the diskettes come in. You cannot, of course, interchange different-size diskettes.

Reinforced Hub (RH)

A reinforced hub is a plastic ring, similar to a loose-leaf life extender, that supports the mylar inside a 5¼-inch diskette and protects it from the drive motor's hub. Usually it is worth the extra cost. If you obtain 5¼-inch diskettes without the hubs, you can get a kit for installing the hubs yourself.

Colored Diskettes

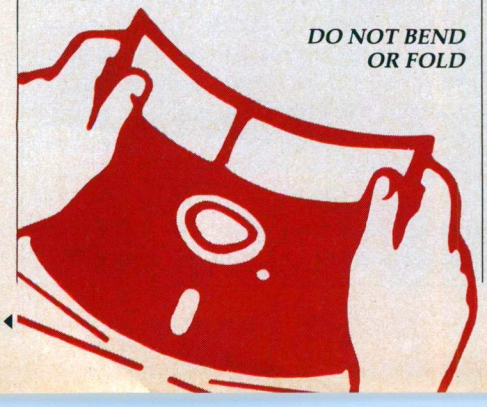
You can get both 5¼- and 3.5-inch diskettes with color-coded cases, although internally they are all similar. Colored diskettes can be handy. For example, you can use one color for accounts payable and another for accounts receivable, employ a color for backup diskettes, or choose a special color for classified data.

sors. Put the diskette in and tape it up, and it's ready to send!

Disk-Drive Maintenance

If your computer has a maintenance contract, you should get the drives cleaned and aligned every three to six months. If you don't have such a contract, don't adjust your drives until you need to. (Engineer's Law: If it ain't broke, don't fix it!) When you start to get "soft errors" (the drive needs several tries to read or write something successfully or gives I/O error messages on various random sectors), you should get the drive aligned. If you have a disk-speed program (e.g., Locksmith), you can run it as often as you like. You should have the speed adjusted if the drive is more than 10% (30 units on a 300RPM drive) out of center. Don't forget that by adjusting the speed yourself, you may void your computer's warranty.

If you don't want to get a maintenance contract for your computer, I still recommend getting one for your drives. In most cases, if you want an extended warranty for your drives, you have to purchase the contract for the computer also, but if you can purchase a drive-maintenance contract, then do so. Why? Your computer has very few, if any, moving parts, and once your computer is burned in, very little can go wrong with it. Your disk drive is a different story. It has at least two motors and several moving parts. Your disk drive has to put up with many different diskettes, of varying quality. The mean time to failure (MTTF) for a 5¼-inch floppy-disk drive is about 8000 hours. For constant day-in day-out operation, you're talking about eight months. For most users, however, the MTTF is about two to three years, and the design improvements in 3.5-inch drives have led to an even longer MTTF for them. Since your drive includes most of the moving parts in your computer, you should consider it the weakest component and treat it as such.



DO NOT BEND OR FOLD

Many people use special cleaning diskettes every month to clean the drive heads, but I've personally never liked them. Whenever I have to clean the heads on my drives, I open up the drives and use a swab of cleaning fluid to clean the heads directly. If you're squeamish about opening up your drive, however, then the cleaning diskettes are the best way to go. Make sure when choosing a cleaning diskette that it uses a low-abrasive cleaner. (Contrary to various ads, no cleaning diskette is totally abrasive-free, since the abrasives are what does the cleaning.) Follow the directions with the cleaning diskette, and remember rule number 1 of cleaning diskettes: Use them only when it is necessary to do so.

NEVER PLACE NEAR A MAGNETIC FIELD

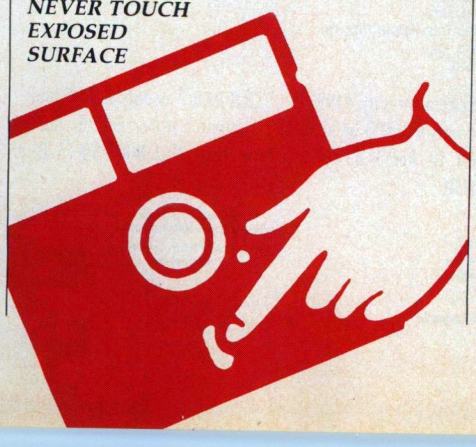
Should your drive give you problems with a program, don't put in the backup until you have determined what the problem is. Use a scrap disk without anything important on it. If you have access to a second computer, try to see if your diskette still works on the other computer. If your system has two drives, then exchange

the drives or, if necessary, take your diskettes to your dealer and check to see if they work in the store's demo machines.

After all the precautions you take, no matter how much you pamper your diskettes, drive, and system, sooner or later you will get a dreaded I/O ERROR or similar message. Sometimes the data will be lost forever, and you will have to use a backup copy, but at other times you may be able to recover the destroyed information. If the diskette won't boot but will catalog, use a file-transfer program (e.g., Filer.System for the UCSD P-system, FID for DOS 3.3, FILER for ProDOS, or PIP for CP/M) to copy all the files onto a new diskette. If the bad files are not important or if you have backups made before those files were last updated, then transfer the good files to a new diskette and transfer the backup's replacements for the bad files.

In the worst-case scenario, your diskette's VTOC (volume table of contents) and catalog (where the disk drive stores the information that tells it what files are on the diskette and where they are located) may be destroyed. You can get this information back with a good disk-editing utility, a full understanding of how the information is stored on the diskette, and plenty of time—or by obtaining a special disk-recovery utility. Several good disk-recovery utilities are available—among them Locksmith and Mr. Fixit from Alpha Logic Business Systems, and Bag of Tricks from Quality Software—and you should make sure that the one you purchase will do everything you want it to do and also ascertain that the recover utility will work with your hardware configuration. If all else fails, use your backup—you did remember to make one, didn't you? +

Philip Chien is a free-lance writer living in Florida who has published more than 60 computer articles.



FURTHER INFORMATION

SOFTWARE

Locksmith, besides fulfilling its traditional functions as a backup program, comes with several disk-care utilities, including Disk Certify and Disk Speed, and accommodates DOS and ProDOS diskettes.

Mr. Fixit is a data retrieval program that helps you recover lost information from damaged or failed DOS 3.3. diskettes. It can also check for errors on diskettes, rebuild lost directories, and restore accidentally deleted files.

Locksmith Version 6.0
Mr. Fixit
Alpha Logic Business Systems, Inc.
4119 North Union Road
Woodstock, IL 60098
(815) 568-5166
List Price: Locksmith, $99; Mr. Fixit, $49.95

Bag of Tricks is a set of utilities that lets you change data on standard Apple (DOS 3.3, UCSD, ProDOS, CP/M)

UPTIME™
• THE DISK MONTHLY •

Get 120 programs for less than 60¢ each!

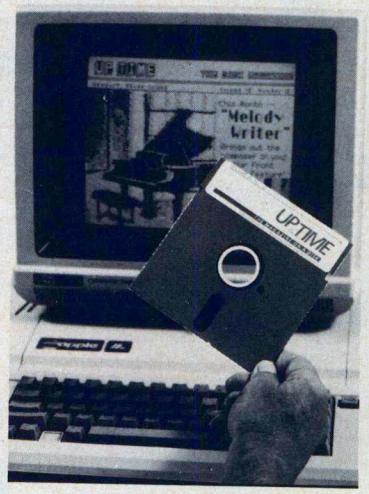
Make your life easier and get more from your computer.

Organize your life and be more productive with our home management and finance programs. Have fun learning with educational programs and fun relaxing with games and adventures. You'll find business, graphics, utilities and more!

Ten programs and more on every disk — a wealth of information. Subscribe now!

Make the very next disk yours! Fill in the coupon and return it to us.

We make it easy and inexpensive — a disk each month.



Free Offer!

Take advantage of this introductory offer! Subscribe and receive **Mail Magic** FREE! Add, edit, or delete names and addresses; sort by name, city, state or zip; print labels and more. Yours with any purchase below.

Offer expires June 30, 1986

For Immediate Service Call Us Toll-Free: 1-800-437-0033
In Rhode Island: 1-401-849-4926

I'LL BYTE!!! I'm a computer enthusiast who wants more. Please start my subscription to UPTIME immediately. I want:

12 Disk Issues $66 ☐ **6** Disk Issues $48 ☐ **3** Disk Issues $30 ☐ **1** Disk Issue $11.95 ☐

(Add $2 per issue in foreign countries, except Canada and APO)

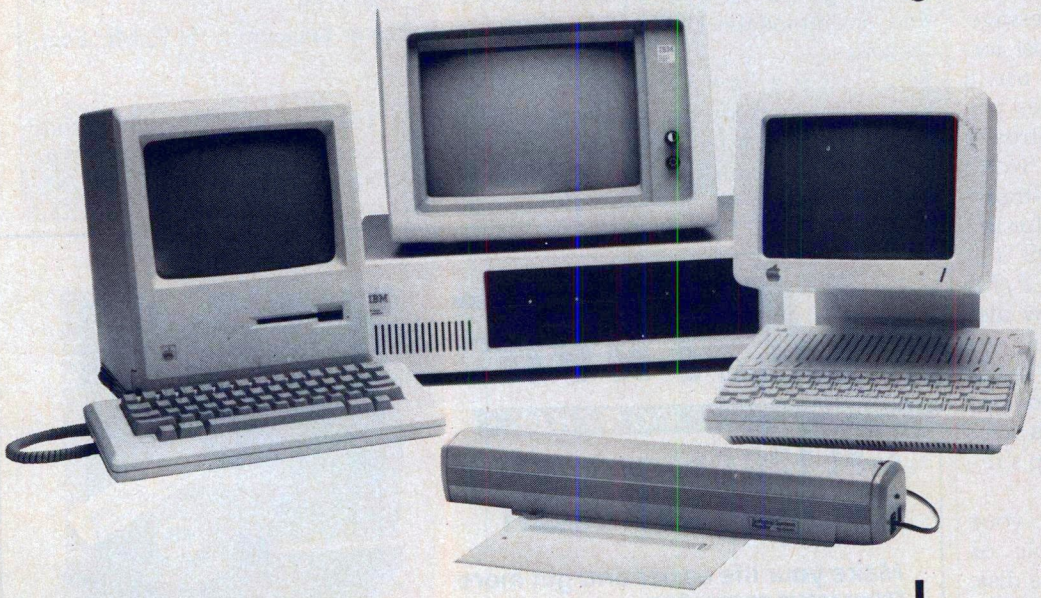
Name _____
Address _____
City _____ **State** _____ **Zip** _____

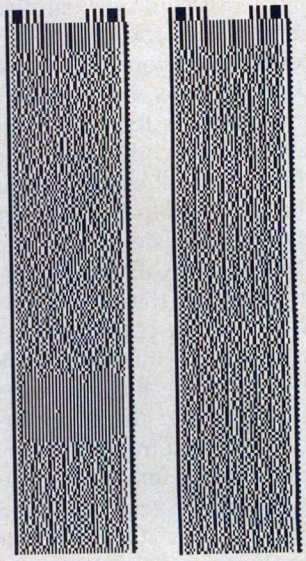
☐ Please send my free **Mail Magic** disk.
☐ Payment enclosed. (Please make checks payable to UPTIME.)
☐ Bill my: ☐ VISA ☐ MASTERCARD
Account No. _____ Expiration Date _____
Signature _____
☐ Please send information on UPTIME for Macintosh.

Send to: UPTIME, PO BOX 299, NEWPORT, RI 02840.
Subscribe now and save. You won't believe the value! Satisfaction guaranteed.

CIRCLE 219 ON READER SERVICE CARD

COMMUNICATE BETWEEN COMPUTERS...

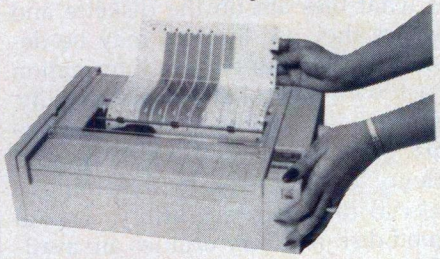




RED2BLUE.COM
Conversion Program

READTHIS.TXT
INSTRUCTIONS

ON PAPER



Use Mac or Apple files on a PC? Difficult? Not with the revolutionary Cauzin Softstrip™ System. With it you can easily move data between incompatible computers. Transfer ASCII or binary, word processing, data base or spreadsheet files. Mac to PC. PC to Mac. Apple to PC. And back again.

Picture a complete system. One that provides a simple and reliable way to distribute and retrieve information. Anything you can put on a magnetic disk, you can put on a Softstrip data strip. Facts. Figures. Software programs. Video games. Product demonstrations. Sheet music. And the list goes on.

A new industry standard, Softstrip technology, has rapidly changed the shape of computer software. You've probably already noticed the change on the pages of leading magazines. Data Based Advisor. MACazine. Nibble mac. MacUser. // Computing. Keyboards Computers & Software. These are just some of the growing ranks of publications featuring programs and data editorially in a form you can scan right into your computer — without typing!

But that's just the beginning of the Softstrip story and the real art of stripping . . .

How can you take an Apple file and read it into a PC word processor?

- Enter your document in DOS 3.3 AppleWriter, or convert a ProDOS AppleWriter file to DOS 3.3, or save an AppleWorks file as ASCII and convert it to DOS 3.3.
- Print your file as strips using Apple STRIPPER™.
- Read the strips into the PC with the Softstrip reader.
- Follow directions contained in READTHIS.TXT (strip above, right).
- Run "RED2BLUE" (strip above, left) to convert the Apple file for your PC word processor.

TECH SPECS

The Reader is lightweight and portable. It comes complete with all the software and cables you should need to connect it to your PC; Apple II series; or Macintosh computer. It has its own power supply and connects to standard RS232 ports (or to the Apple //e cassette port).

ALL YOU NEED TO START STRIPPING...
besides your computer, a Softstrip reader, and STRIPPER™ (the "make-it-yourself Softstrip data strip program"):

FOR IBM PC or 100% COMPATIBLE OWNERS
Epson RX or FX printer
Printer interface card

FOR APPLE II OWNERS
Epson RX or FX printer, or,
Apple Imagewriter I or II, and,
Super Serial™ card (built into Apple //c), or,
Grappler™ graphics card, or,
Dumpling™ graphics card.

FOR MACINTOSH OWNERS
Apple Imagewriter I or II

You can buy the Softstrip System for only $199.95 (STRIPPER™ is only $19.95 and an extra accessory kit is also only $19.95) at all better computer stores. For the one nearest you, or to order direct, (if there is no dealer in your area) call: 1-800-533-7323 in Connecticut: 203-573-0150.

Dumpling is a trademark of Microtek, Inc.
Grappler is a trademark of Orange Micro, Inc.
Epson is a registered trademark of Epson America, Inc.
Macintosh is a trademark of McIntosh Laboratories, and is licensed to Apple Computer, Inc.
Apple is a registered trademark and Imagewriter, Image Writer II, and Super Serial Card are trademarks of Apple Computer, Inc.
IBM is a registered trademark of International Business Machines Corporation.
Softstrip and STRIPPER are trademarks of Cauzin Systems, Inc.

Cauzin Systems, Inc.
835 South Main St., Waterbury, CT 06706

CIRCLE 120 ON READER SERVICE CARD

diskettes. The utility program includes a recover program for DOS 3.3 that can undelete accidentally deleted files and attempt to recover lost information on diskettes with DOS data. A new version of Bag of Tricks can also recover data on ProDOS diskettes.
Bag of Tricks
Quality Software
21601 Marilla Street
Chatsworth, CA 91311
(818) 709-1721
List Price: $39.95

DISKETTES

Polaroid diskettes come with a 20-year media guarantee, but besides the standard media-replacement guarantee, Polaroid also has an unique data-recovery service. If your Polaroid diskette has any data on it that has been damaged in any way, either by contamination (a foreign substance touching the medium) or by software (accidentally erased information), Polaroid will attempt to recover the data for you. Just send the diskette, and the company will send back a replacement diskette with as much data as its technicians can recover within 48 hours. The diskettes accommodate all of the Apple formats (DOS, UCSD, Pascal, ProDOS, and even the Macintosh's 3.5-inch format).

Polaroid
575 Technology Square
Cambridge, MA 02139
(800) 241-4403

3M produces, besides diskettes, a variety of disk-drive-cleaning and -maintenance kits. You can obtain a free brochure entitled *How Not to Worry* by calling the number below.

3M
St. Paul, MN 55144
(800) 328-1369

U.S/Disk makes a variety of diskettes, including color-coded diskettes in a variety of colors. The company has a unique two-for-one warranty policy. If one of its diskettes fails and you send it for replacement, U.S./Disk will send you back two replacement diskettes.

U.S/Disk, Inc.
2235–101 Encinitas Blvd.
Encinitas, CA 92024
(800) 992-1992
In CA (800) 992-1993

DON'T BUY A HARD DISK DRIVE, OR ANOTHER BOARD...

...until we expose you to
The New Kache Plus Card
next month!

OKS
Ohio Kache Systems Corp.
Dayton, Ohio

© Ohio Kache Systems is a developer of computer enhancement products.

CIRCLE 178 ON READER SERVICE CARD

APPLE WRITER II WORD PROCESSING LANGUAGE

WHAT THE MANUAL DOESN'T TELL YOU

The Apple Writer II word-processing program and its associated manual are comprehensive and the many applications well presented, but the manual does neglect a few significant areas. This article deals with one of the most important missing items, the creation of form letters and the addressing of associated envelopes.

Form letters fall into two primary categories. The first is what you might call the shotgun or broadcast category. The salutation of this type of letter is usually "Dear Sir:" or "Dear Ms.:," since you don't know the addressee's name and are using only the person's title in the address on the letter and the envelope. The second type of form letter involves the use of names as well as titles.

If you're not yet reasonably familiar with Apple Writer II (AWII) and its Word Processing Language (WPL), you should take a close look not only at the earlier sections of the manual but also at all of the WPL programming examples, beginning on page 74, especially the AUTOLETTER example. You will notice a marked difference between WPL and computer languages such as BASIC. In BASIC, all lines have gradually increasing line numbers, whereas WPL doesn't use line numbers. WPL is, in fact, somewhat like assembly language.

To create form letters with WPL, pay particular attention to lesson 4, "Using Numbers to Retrieve Text File Segments," starting on page 82 of the manual, and to "AUTOLETTER" on page 99 (see figure 1). The method of numbering addresses, including the name of the addressee as well as the company name and address per se, is of key importance, not only with respect to form letters and envelopes, but also for any purpose that requires printing out (and/or displaying) the contents of a file list.

```
START   PSX 1
LOOP    NY
        LFORMLETTER
        B
        F/(Address)//
        Y?
        LADDRS/<(X)>/</N
        PGO FOUND
        PGO QUIT
FOUND   PLSADDRS/<(X)>/ /N=$A
        B
        F/(Name)/$A/A
        PNP
        PSX +1
        PGO LOOP
QUIT    PIN
        NY
```

Figure 1: The WPL AUTOLETTER program

Creating a Form Letter

Now you can generate a typical form letter of the broadcast type (see figure 2). The first step is to create a name/address list as illustrated on page 98 of the manual, with each address field numbered in angle brackets (< >), starting with <1>. You must use angle brackets rather than standard brackets in WPL address numbering; otherwise the system will not work. Also, in practice, you don't type the addressee's title and the address on the form-letter draft as shown in figure 2. Instead, you put only the date on the first line, followed by (Address) at the start of the same line or the second or third line after it. The AUTOLETTER WPL program in figure 1 will take care of inserting the correct address field.

The next step is to make up unique filenames for each set of form letters. Let's say, for example, that the form letter in figure 2 is called OVERDUE ACCOUNTS. Purely as a matter of convenience, you abbreviate this file name as OVRDUACTS and treat various later filenames similarly. The file with company names and addresses can have an abbreviated filename such as ADRSLST. You use these filenames in saving the form letter and address texts, respectively. Filenames can be uppercase or lowercase. When you display the disk catalog, lowercase filenames automatically appear in uppercase characters.

Now you display the WPL pro-

ILLUSTRATION BY MERCEDES McDONALD

gram AUTOLETTER by typing the filename AUTOLETTER. The WPL program in figure 1 will appear on the screen. Using the cursor-movement sequence, move the cursor down to line 3. Shift the cursor to the right until it is placed immediately after the last R of FORMLETTER. Now press the space bar once to change the cursor to its normal state, and, using the left arrow key (Apple IIe and IIc users use the Delete key), backspace until the word FORMLETTER is wiped out. Then substitute your own form-letter filename—OVRDUACTS, in this case. In a similar manner, go down to line 10 and substitute for the existing word ADDRS your new filename ADRSLST. Whenever you want words in all uppercase characters, all you have to do is to type a Control-K; the same command lets you revert back to lowercase.

Now save this modified AUTOLETTER WPL program under a new title, let's say FRMLTRMSTR as an abbreviation for FORM LETTER MASTER. The modified AUTOLETTER WPL program that appears in figure 3 has the filename OVRDUACTS substituted for FORMLETTER and ADRSLST for ADDRS.

```
                                        June 22, 1986
The Director of Finance
XYZ Co., Inc.
12345 A Street
San Jose, CA 94112



RE: OVERDUE ACCOUNTS RECEIVABLE


Dear Sir (or Ms.):
   We would like to take this
opportunity to inform you personally
that more than 90 days have passed
since we filled your orders. To date no
payments have been forthcoming.
   We would appreciate it if you would
see that your Accounts Department sent
payments in full on all overdue
accounts by return mail.


                                   Yours, etc.
.ff
```

Figure 2: A sample "broadcast" form letter. Note that the .ff at the end of the letter is not followed by a carriage return. The date can be either on the same line as the start of the name and address section or 1 or 2 lines above, if desired.

Printing Letters

You're now ready to print some form letters. Turn on your *letter-quality* printer; insert a single sheet into the printer; and type a Control-P and the words DO FRMLTRMSTR.

After the disk drive stops, the

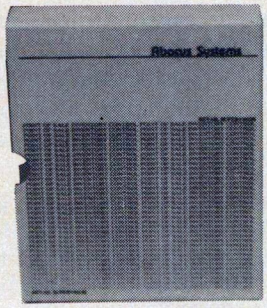
```
START   PSX 1
LOOP    NY
        LOVRDUACTS
        B
        F/(Address)//
        Y?
        LADRSLST/‹(X)›/‹/N
        PGO FOUND
        PGO QUIT
FOUND   PLSADRSLST/‹(X)›/ /N=$A
        B
        F/(Name)/$A/A
        PNP
        PSX+1
        PGO LOOP
QUIT    PIN
        NY
```

Figure 3: The FRMLTRMSTR program

Retail Management MADE Easy

For years Large Retailers have enjoyed the benefits of computerized Inventory Control.

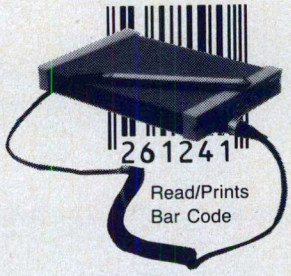
Now! the **Retail Supervisor** enables you to realize the Time and Cost savings of a fully automated Point-of-Sale and Inventory Control system.



Clear, concise reports allow you to eliminate Overstocks, identify Slow Movers, reduce Stockouts and improve Profit Margins.

The Retail Supervisor will give you control of your Inventory Investment and enhance your ability to make profitable Management Decisions.

The Retail Supervisor will consistently contribute more to your profits than any other Investment you can make. To see how the Retail Supervisor can improve your Bottom Line,



Call for a dealer near you.

Abacus Systems™

707 Cass St., La Crosse, WI 54601, (608) 785-1740

The Retail Supervisor is available for the Enhanced Apple IIe and Apple IIc.

Apple is a registered trademark of Apple Computer, Inc. Retail Supervisor, Abacus Systems, and the Abacus Systems Logo, are trademarks of Abacus Inc.

CIRCLE 114 ON READER SERVICE CARD

screen will show the upper portion of the first letter with the first name and address, and a moment later, a statement will appear at the top of the screen telling you to insert a sheet and press Return. As soon as you press the Return key, assuming the printer is properly connected to and compatible with the computer, the letter should start printing. After one or two tries on plain paper to adjust the printer's left paper guide and the top of the sheet for proper positioning of the top margin, you can start automatic printing of the whole list on regular letterhead sheets.

You may want to modify your list of titles plus company names and addresses to include the phrase "Private Secretary, Office of" on the first line, preceding the title of the recipient (The Director of Finance, in the figure 2 example). This phrase may personalize a broadcast letter enough to save it from the oblivion that befalls so many form letters.

To add the phrase, you must modify the address list with the filename ADRSLST as follows, after first loading the file ADRSLST into memory and displaying it on the screen: You position the cursor to the right of <1> and type in Private Secretary, Office of. The word *of* is the last word of the first line, without any subsequent punctuation. Do *not* insert a space after the right angle bracket. Follow the same procedure for each successive number in angle brackets.

Now your address list will look like figure 4.

```
<1>Private Secretary, Office of
The Director of Finance
XYZ, Inc.
12345 A Street
San Jose, CA 95112
<2>Private Secretary, Office of
The Director of Finance
·Firm name
Street
City, state initials, and ZIP code
<3>Private Secretary, Office of
The Director of Finance
etc.
```

Figure 4: A modified list of titles plus company names and addresses

When the list is complete, add the next number in angle brackets after the last address, press Return, and add .ff at the start of the next line—*do not* add a carriage return. Let's say the last address in your list is <30> Private Secretary, etc. The next two lines are as follows:

```
<31>
.ff [no carriage return]
```

The extra number in angle brackets ensures that the computer will print the last letter completely, and the .ff is the form-feed signal to indicate the end of a page. In this instance, for both the letters and the envelopes, the .ff causes the ejection of the letters and the envelopes after printing.

Now that you've mastered the broadcast form letter, you can work on the personal-salutation type (i.e., "Mr. John Jones" in the address and "Dear Mr. Jones" in the salutation, or "Dear John" if you happen to be an acquaintance of the addressee).

Lesson 8 (page 88) of the AWII manual is entitled "Personalizing a Letter beyond the Address." In addition to dealing with the numbered address list, it covers the insertion of the recipient's name in various places in the letter, including the salutation. The manual says that you should type (Name) wherever you want the first name. It defines the first name as "the segment between <1> and a space." The only problem is that if you have Mr. John Jones, the first space after the <1> is after the Mr.; hence, in each place you insert (Name), the WPL program will print Mr., not the desired Mr. Jones or John. Here's a method that gets around that problem, however: In order to have the WPL program print Jones in the salutation, you have to type the Dear Mr. in advance in your form letter. The beginning of the letter might initially look something like figure 5, below (after AUTOLETTER printing from the ADRSLST WPL program).

```
                                Date

Mr. John Doe
Firm name
Street address
City, state initials, and ZIP code

RE: Fill in subject here if required

Dear Mr.
Start letter text here.
```

Figure 5: The beginning of a letter in an unmodified AUTOLETTER program

InfoMerge
For AppleWorks™
$79
On-screen, direct-print mail merge program.
Uses AppleWorks database and word processor files, direct database manipulation.
Local/global keyboard inputs, field calculations, automatic reformatting, optional on-screen formatted print preview, and more.
Works with Pinpoint!
Pinpoint
24 Hour Toll Free Order Phone
800-633-2252/Ext. 580

Micro Cookbook
$49.95
Instant Menu Planner
3,000 Recipes Available
Adjusts Ingredients for Number of Servings
Valuable On-Line Reference
Automatic Shopping Lists
Pinpoint
24 Hour Toll Free Order Phone
800-633-2252/Ext. 580

Point to Point
by Gary Little
$129
Powerful telecomunications software with AppleWorks™ filecard interface.
Send/receive files unattended (with clock), powerful progamming macros eclipse AE Pro.
XMODEM binary/text file transfers, 2400 Baud modem support and more.
Works with Pinpoint on your Apple IIc/IIe!
Pinpoint
24 Hour Toll Free Order Phone
800-633-2252/Ext. 580
Box 13323, Oakland, CA 94661
CIRCLE 152 ON READER SERVICE CARD

Our next step is to generate a suitable, modified AUTOLETTER program.

Load AUTOLETTER as before. Let's say you've given the broadcast and personalized form letters the filenames LETTER A and LETTER B, respectively. Change the third line from L FORMLETTER to L LETTER B; the seventh line from L ADDRS, etc. to L ADRSLST, etc.; and the tenth line (after FOUND) to PLS#/$$/%%/N=$A. Now insert five new lines, starting after the 12th line: The new 13th line reads B, the 14th F/$$//A, the 15th B, the 16th F/%%//A, and the 17th B. The final five lines of AUTOLETTER remain unchanged. To conserve memory space, you can arbitrarily assign the filename LTRMSTRB to AUTOLETTER modified for LETTER B, instead of the longer full title LETTER MASTER B. Figure 6 shows a printout of the LTRMSTRB file.

```
START  PSX 1
LOOP   NY
       LLETTER B
       B
       F/(Address)//
       Y?
       LADRSLST/(X)/(/N
       PGO FOUND
       PGO QUIT
FOUND  PLS#/$$/%%/N=$A
       B
       F/(Name)/$A/A
       B
       F/$$//A
       B
       F/%%//A
       B
       PNP
       PSX +1
       PGO LOOP
QUIT   PIN
       NY
```

Figure 6: The LTRMSTR B program

The final touch for personalized letters is to modify the general heading format of LETTER B so it looks like figure 7, below.

```
                                June 22, 1986

Address
RE: Fill in subject here if required
Dear Mr. (Name):
Start letter text here.
```

Figure 7: The general heading format of LETTER B after modification

To accomplish this modification, you change the ADRSLST file as follows in figure 8, below.

```
(1)Mr. John $$Jones%%
XYZ. Inc.
12345 A Street
San Jose, CA 94112
(2)Mr. Peter $$Smith%%
Delta Associates, Inc.
1 Executive Plaza, Suite 10
San Francisco, CA 94102
(3), etc.
```

Figure 8: To accomplish the modifications in figure 7, you make the above changes to your ADRSLST file.

The $$ and %% signs are delimiters that bracket the names you want printed wherever the (Name) Marker shows up.

In the current example, the names you delimit in this way will appear after the Dear Mr., followed by a colon to end the formal, personalized salutation. Of course, if you want Dear John or Dear Mary in lieu of Dear Mr. Jones, the $$ and %% should bracket the desired name. Therefore, the ADRSLST file has to read $$John%% or $$Mary%% instead of $$Jones%%, wherever you want the personal name form, and you don't use the Mr. after the Dear.

Preparing Envelopes

Now we have arrived at the last but equally important function, the preparation of envelopes in the same letter-quality type as you used in your form letters. (Having the envelopes match the type quality of the letters gives the appearance of individually written letters.) Envelope preparation requires a three-step process involving changes to the WPL AUTOLETTER program:

1. Change the third line from L FORMLETTER to L ENVLTR; the seventh line from L ADDRS, etc. to L ADRSLST, etc.; and, finally, the tenth line (after the initial word FOUND) to PLS ADRSLST, etc. You can call this modified WPL program ENVMSTR, for ENVELOPE MASTER (see figure 9).

```
START  PSX 1
LOOP   NY
       LENVLTR
       B
       F/(Address)//
       Y$
       LADRSLST/(X)/(/N
       PGO FOUND
       PGO QUIT
FOUND  PLSADRSLST/(X)/ /N=$A
       B
       PNP
       PSX +1
       PGO LOOP
QUIT   PIN
       NY
```

Figure 9: The ENVMSTR program

2. The next step is to create the new FORMLETTER under the shortened filename of ENVLTR, as noted above. This simple WPL program reads as follows:

```
(Address)
.ff
```

Nothing more is necessary. Don't forget, there is no carriage return after the .ff.

3. The third step is to make up a modified printing format suitable for envelopes. In this instance, if you leave the printer's left paper guide as it was for the letters, you should change the printing format so that the left margin (LM) reads 45 instead of the default 9.

You can also change the page interval (PI) to 33 in lieu of the default 66, since the envelope is less than half as wide as a normal 8½ × 11-inch page. Change the page length (PL) to 33 as well and save it, using the filename ENVFORMAT. You can adjust the vertical centering of the typed name and address by rolling the printer platen so that the envelope's top edge is at some easily remembered point above the platen.

The process of automatically addressing envelopes, matching the names and addresses already printed on your form letters, is also simple. First experiment with a few envelopes to check the vertical and lateral envelope placement in the printer. Now you're ready for the real thing. Put a blank envelope in the printer and type a Control-P, followed by DO ENVMSTR.

The disk drive will operate briefly; then the computer will instruct you to insert a sheet (only if the SP printing parameter is set to 1) and press Return. The printer will quickly type in the name and address and eject each envelope. +

J.P. Neil is a Mountain View, California, consulting engineer.

What are You Doing with AppleWorks?

Are you using AppleWorks to its full potential? Do you have the time to set up the kind of AppleWorks application possible for your business or profession? If you're like most AppleWorks users, probably not.

The Q-mar group's AppleWorks Applications are ready-to-use, fully designed spreadsheets, databases, and word processor documents.* We've used experts in all fields to do the work for you.

And we know AppleWorks like no other. We publish the AppleWorks Exclusive Reference newsletter, written by professional authors. We think you'll agree that the AppleWorks Applications and the Exclusive Reference newsletter will be a valuable addition to your AppleWorks software.

* Some even include files for AppleWorks add-on products, such as ReportWorks and MacroWorks. All Applications Require AppleWorks.

FactWorks
Volumes 1, 2, & 3

Encyclopedia Disks for AppleWorks. Turns your Apple into an information tool, filled with facts about presidents, reptiles, planets, animals, and more. Also includes complete transcriptions of the Gettysburg Address, the Monroe Doctrine, the Declaration of Independence, the U.S. Constitution, and more!

CookWorks
Mexican, Italian, Chinese

Better cookin' with three exquisite recipe disks for your AppleWorks database. Three volumes: Mexican, Italian, and Chinese.

FactWorks & CookWorks...

Only 32.95 each
84.95 for the set.

Subscribers:
27.95 each
74.95 for the set.

General Ledger

Maintains your Chart of Accounts, prints Financial Statements, Balance Sheet, Cash Flow Analysis, Income Statement, more.
Regular 89.95 Subscribers: 69.95

Time Management

Tracks your important goals, priorities, and your schedule.
Regular: 59.95 Subscribers: 42.95

Printer's Tools

For print shops. Includes Estimation, Billing, Sales Lead Files, Materials Management, more.
Regular: 49.95 Subscriber: 34.95

Two or More Applications

Receive the Collection Disk FREE! Includes Personal Check Register, Sales Tools, Tutorial Files, Letterhead Setup, Special Utilities, and more.

Newsletter Subscriptions

Subscribers use Subscriber Discount Prices. You may subscribe with your order and receive all discount privileges.
12 issues: 39.95 24 issues: 69.95

Call: (619) 455-7513

The Q-mar group • Box 11215 • San Diego, CA • 92111

Yes Please rush my order for these items:

- ☐ General Ledger
- ☐ Time Management
- ☐ Teacher's Tools
- ☐ Business Letters
- ☐ Business Contracts
- ☐ Investment Analysis
- ☐ Financial Analysis
- ☐ Graphic Arts System
- ☐ Homebuilder's Tools
- ☐ Printer's Tools
- ☐ FactWorks Volume 1
- ☐ FactWorks Volume 2
- ☐ FactWorks Volume 3
- ☐ Mexican CookWorks
- ☐ Italian CookWorks
- ☐ Chinese CookWorks
- ☐ Exclusive Reference 12 issues
- ☐ Exclusive Reference 24 issues (do not include shipping)

Send To:

☐ Check Enclosed ☐ Send C.O.D. ☐ Send my free Collection Disk.

Also...

Business Letters
Regular: 49.95 Subscriber: 34.95

Business Contracts
Regular: 49.95 Subscriber: 34.95

Personal Financial Disk One
Regular: 49.95 Subscriber: 34.95

Graphics/Advertising System
Regular: 59.95 Subscriber: 44.95

Homebuilder's Tools
Regular: 69.95 Subscriber: 54.95

Teacher's Tools
Regular: 49.95 Subscriber: 34.95

Template orders add $5 shipping/handling. California residents add 6% sales tax

CIRCLE 281 ON READER SERVICE CARD

PROGRAMS PLUS ▷ 1-800-832-3201

Computers

Apple Computer	
Apple / / e Color & Mono Systems	Call
Apple / / c Color & Mono Systems	Call
Macintosh 512K Computers	Call
Macintosh Plus Computers	Call
Central Point Software	
Laser 128K Computer	379.00

The Laser 128 includes an Expansion Slot, RGB Video Output, Parallel Printer Port, and a 10 Key Numeric Keypad! Most Apple Compatible Computer Available at Any Price!

BackUp Utilities/Boards

Alpha Logic Locksmith 6.0	59.00
Applied Technology Laboratory	
Copy Master II 128K w/Gr. Dump	92.00
Central Point Software	
Copy II Plus Version 6	20.00
Wildcard II	70.00
Computer Applications	
Nibbles Away III/NADOL	59.00
Golden Delicious Software LTD	
CIA Files	46.00
Utilico Software—E.D.D. IV	42.00
E.D.D. IV Plus *(II, II+, //e w/Disk II)*	109.00
E.D.D. IV Plus *(//e w/DuoDisk or UniDisk)*	119.00

Entertainment

Access Software	
Beach-Head or Beach-Head II	21.00
Accolade Dam Busters or Fight Night	20.00
Hard Ball of Laws or the West	20.00
Psi 5 Trading Co. or Sundog V2.0	20.00
Activision	
Alcazar or Master of the Lamps	24.00
Borrowed Time	24.00
Countdown to Shutdown	24.00
Ghost Busters or Pitfall II	24.00
Great American Road Race	24.00
Hacker or Space Shuttle	24.00
Little Computer People Discovery Kit	24.00
Mindshadow or Tracer Sanction	24.00
Star League Baseball	19.00
Alter Ego (Male or Female)	29.00
Avalon Hill Under Fire!	34.00
Avant-Garde	
Dave Winfield's Batter Up	24.00
Joe Theismann's Pro Football	24.00
Bantam Publishing	
Cave of Time or Escape	22.00
Fourth Protocol	24.00
I'Damiano the Wizard of Partestrada	24.00
Sherlock Holms: "Another Bow"	24.00
Blue Chip Software	
Millionaire, Tycoon, Barron or Squire	24.00
Broderbund Ancient Art of War	24.00
Captain Goodnight & the Islands of Fear	21.00
Championship Lode Runner or Karateka	21.00
Mask of the Sun or Serpent's Star	24.00
Where in the World is Carmen, San Diego?	24.00
Data East Karate Champ	25.00
DataSoft Alternate Reality	27.00
Bruce Lee, Conan, or Mr. Do	22.00
The Goonies, Zorro, or Pooyan	22.00
221B Baker Street	24.00
The Never Ending Story	24.00
Mind Persuit or Crosscheck	24.00
Electronic Arts	
Adventure Construction Set or Ogre	32.00
Archon II or One-On-One	25.00
Age Of Adventure	22.00
Wizard	28.00
Carriers At War or Wilderness	32.00
ChessMaster 2000	25.00
Europe Ablaze	32.00
Murder on the Zinderneuf	14.00
Music Construction Set	25.00
Pinball Construction Set	22.00
Reach for the Stars or Bard's Tale	28.00
Super Boulder Dash	22.00
7 Cities of Gold or Skyfox	25.00
Golden Oldies or Lords of Conquest	22.00
EPYX	
Koronis Rift or The Eidolon	24.00
Barbie or G.I. Joe	19.00
Movie Monster Game	24.00
Ballblazer or Rescue on Fractulus	24.00
Summer Games II or Winter Games	24.00
Temple of Apshai Trilogy	24.00
World's Greatest Baseball Game	21.00
World's Greatest Football Game	24.00
Firebird Elite	26.00
Colossus Chess IV	29.00
Hayden Software	
Computer Novel Construction Set	30.00
Sargon III, Holy Grail, or Inca	30.00
Infocom A Mind Forever Voyaging	26.50
Cutthroats, Seastalker, or Ballyhoo	23.50
Deadline or Starcross or SpellBreaker	28.50
Hitchhiker's Guide to The Galaxy	23.50
Infidel or Sorceror	26.50
Witness, Planetfall, or Enchantor	23.50
Zork I, Wishbringer, or Fooblitzky	23.50
Zork II, Zork III, or Suspect	26.50
Micro League Sports	
Micro League Baseball	24.00
General Manager/Owner	24.00
Microprose	
Solo Flight or Nato Commander	21.00
F-15 Strike Eagle or Acrojet	21.00
Gunship, Silent Service, or Kennedy Approach	21.00
Crusade in Europe or Conflict in Vietnam	25.00
Decision in The Desert	24.00
Mindscape	
Deja Vu: "A Nightmare Comes True"	34.00
Dick Francis High Stakes	29.00
Forbidden Castle or Voodoo Island	24.00
James Bond: "A View To Kill"	24.00
James Bond: "Goldfinger"	24.00
Racter or The Halley Project	27.00
Rambo: "First Blood Part II"	24.00
Stephen King's "The Mist"	24.00
The American Challenge	29.00
Omnitrend Software	
Omnitrend's Universe I	62.00
Omnitrend's Universe II	39.00
One Step Software	
Golf Best Pinehurst	30.00
Origin Systems Moebius	37.00
AutoDuel	38.00
Ultima III: Exodus or Ultima IV	36.00
Polarware	
The Quest, Ring Quest, or Oo-Topos	15.00
Coveted Mirror, Xyphus or Transylvania	15.00
Sword of Kadash or The Crimson Crown	15.00
Random House Alpine Encounter	24.00
Sierra-On-Line	
Championship Boxing	21.00
Kings Quest or King's Quest II	30.00
The Black Cauldron	24.00
Simon & Schuster	
Super Zaxxon or Frogger 3 Deep	21.00
Spy Hunter, Tapper or Star Trek	27.00
Sir-Tech Wizardry	29.00
Knight of Diamonds	21.00
Legacy of Llylgamyn	24.00
Rescue Raiders	21.00
Wisiprint	15.00
Spectrum Holobyte Gato	21.00
Synapse Software	
Brimstone, Mindwheel, or Essex	27.00
Strategic Simulations	
Rings of Zilfin, or Colonial Conquest	28.00
Phantasie II, or Panzer Grenadier	28.00
Baltic 85 or Gemstone Warrior	20.50
Battalion Commander	24.00
Battle For Normandy	24.00
50 Mission Crush or Broadsides	23.50
Geopolitique 1990 or Rails West	23.50
Germany 1985 or Carrier Force	35.50
Imperium Galactum	23.50
Kampfgruppe or Reforger 88	35.50
North Atlantic '86	35.50
Operation Market Garden	30.00
War in Russia	47.50
U.S.A.A.F.	32.00
Battle of Antientam or Field of Fire	28.00
Battle Group	42.00
Sublogic Flight Simulator II	31.00
Tellarium Amazon or Dragon World	24.00
Fahrenheit 451 or Shadow Keep	24.00
Nine Princes in Amber	24.00
Perry Mason: Mandarin Murders	24.00
Rendezvous with Rama	24.00
Windham Classics	
Below the Root or Swiss Family Robinson	19.00
Treasure Island or Wizard Of Oz	19.00

Utility/Language Software

Apple Computer	
Apple II Instant Pascal	105.00
Apple Pascal V1.3	189.00
Champanion Software Facelift 2	36.00
Beagle Brothers	
MacroWorks or Beagle Basic	18.00
Beagle G.P.L.E.	27.00
Big U, Double Take, or Pro-Byter	18.00
D-Code or Extra K	21.00
Disk Quick or I.O. Silver	16.00
Dos Bos or Silicon Salad	13.00
Fat Cat	18.00
Tip Disk #1	11.00
Pronto Dos or Utility City	15.00
Triple Dump	21.00
Borland Turbo Pascal 3.0	39.00
Turbo Database Tool Box	31.00
Turbo Tutor	21.00
Funk Software	
Sideways Prodos & Dos 3.3	32.00
Laserware Lisa V2.6	53.00
Meacom	
UniDos *(Dos 3.3 for the UniDrive)*	26.00
Microsoft Applesoft Compiler	102.00
Fortran Compiler	125.00
Nikrom	
Master Diagnostics / / e or II+	39.00
Quality Software	
Bag of Tricks II	30.00
Beneath Apple Dos or Beneath Apple ProDos	15.00
Roger Wagner Merlin Pro	57.00
Merlin Assembler	39.00
Merlin Combo Pack	64.00
Software Masters	
Visible Computer: 6502	29.00
The Byte Works	
ORCA/M Macro Assembler ProDos	59.00
Videx AppleWorks Modify Plus 64K	37.00
AppleWorks Modify Plus 128K	47.00
Vilberg Brothers	
DMP Utilities *(ImageWriter or Epson)*	39.00
Woodchuck Industries	
P-Trial: Basic to Pascal Translation	119.00
Zedcor ZBASIC	65.00

Graphics Packages

Activision Game Maker	30.00
Baudville	
Actors & Actions or Heros & Villains	18.00
Blazing Paddles	27.00
Prince *(C. Itoh or Epson)*	42.00
Pix-It	29.00
Shape Library 1, 2, or 3	12.95
Take 1	34.00
Beagle Brothers Alpha Plot	21.00
Beagle Graphics	31.00
Flex Text or Frame Up	15.00
Font Mechanic or Minipix Disk #1	15.00
Shape Mechanic	21.00
Broderbund Dazzle Draw	36.00
Print Shop or Fantavision	29.00
Print Shop Companion	24.00
Print Shop Gr. Library I, II, or III	14.95
Print Shop Paper Refill	12.95
Data Transforms Fontrix 1.5	52.00
Font Paks 1-13 ea.	11.95
Electronic Arts Movie Maker	26.00
Penguin Software	
New Complete Graphics System	29.00
The Graphics Magician	29.00
Sensible Software	
The Graphics Department	65.00
Simon & Schuster	
Great INTL Paper Airplane Const. Kit	24.00
Springboard Newsroom	32.00
Newsroom Clip Art Collection Vol. 1	17.00
Newsroom Clip Art Collection Vol. 2	21.00
Graphics Expander Vol. 1	24.00
Weekly Reader Stickybear Printer	24.00

Communications

Apple Computer	
Access / / *(/ /e/ /c only)*	59.00
Compuserve	
Compuserve Starter Kit	20.00
Hayes Smartcom I	69.00
Hayes Terminal Program *(Smartmodem)*	59.00
Microstuff Crosstalk	99.00
Quark Terminus / /e	69.00
Softronics Softerm II	124.00
Source Telecomputing	
Source On-Line Information Network	30.00
United Software Industries	
ASCII: Express Pro: Prodos or Dos 3.3	69.00

Business Software

Advanced Logic Systems	
SpellWorks	29.00
The Handlers *(II+,/ /e,/ /c)*	97.00
Apple Apple Works *(/ /e, / /c)*	189.00
Apple Writer / / 2.0 ProDos *(/ /e, / /c)*	115.00
Quickfile *(/ /e only)*	75.00
Applied Software Technology	
Versaform / /e, / /c	48.00
Blythe Software Omnis 3	225.00
BPI Systems	
BPI General Accounting Dos 3.3	194.00
BPI AR/AP/PR or Inv. Dos 3.3 (ea.)	194.00
BPI General Accounting ProDos	209.00
BPI AR/AP/PR or Inv. ProDos (ea.)	209.00
Broderbund	
Bank Street Writer or Speller	41.00
Bank Street Filer or Mailer	41.00
CBS Software Stockpak II	89.00
Dow Jones Software	
Dow Jones Membership Kit	19.00
Electronic Arts Cut and Paste	22.00
Financial Cookbook	32.00
First Star The Works	30.00
Good Software Investor III	149.00
Amortizer III	59.00
Haba/Arrays Home Accountant / /e or / /c	39.00
Tax Advantage 1985	37.00
Haba Graph *(Includes Calc)*	35.00
Haba Speller	29.00
Haba Templates	16.00
Haba Graph or Haba Spell It	29.00
Hayden Software The Writer	27.00
Human Edge Software	
Communications or Management Edge	27.00
Mind Prober	27.00
Mind Over Minors	27.00
Sales or Negotiation Edge	27.00
Howardsoft	
Real Estate Analyzer III w/Tax Preparer	189.00
International Solutions MouseBudget	39.00
MouseCalc	85.00
MouseDesk	24.00
MouseWord	69.00
Intuit Quicken	49.00
Kensington Microware	
Format II Enhanced	88.00
Living Videotext	
Think Tank II+ or / /e	79.00
Manzanita	
BusinessWorks	
System Manager *(Required)*	65.00
GL/AR/AP/ or Inventory Control	255.00
Payroll Module	290.00
The Business Accountant	
System Manager *(Required)*	67.00
GL/AR/AP or Inventory Control	195.00
Payroll Module	225.00
The Advanced Business Accountant	
System Manager *(Required)*	65.00
GL/AR/AP or Inventory Control	255.00
Payroll Module	290.00
MECA Managing Your Money	105.00
Megahaus MegaWorks	69.00
ReportWorks	69.00
ThinkWorks	69.00
Monogram	
Dollars and Sense *(/ /+, / /e or / /c)*	68.00
Forecast *(64K or 128K)*	36.00
Nolo Press Will Writer	29.00
Paladin Flashcalc	59.00
PBI Software Graphworks 1.2C	59.00
Jeeves	38.00
Peachtree	
Back To Basics Accounting System: *GL/AR/AP*	98.00
Pinpoint Publishing Pinpoint	35.00
PinPoint Spelling Checker	35.00
PinPoint Toolkit	26.00
Point To Point	Call
PinPoint / /e Upgrade Kit	Call
PinPoint Ram Enhancement	Call
PinPoint Modem Enhancement	Call
PM Software ProFILER 2.1	69.00
Practicorp Practicalc II	26.00
Precision Software SuperBase	54.00
Quark Catalyst / /e V3.0	59.00
Word Juggler & Lexicheck / /e	59.00
Roger Wagner Publishing	
Mouse Write	72.00
The Write Choice	27.00
Satellite Software Wordperfect	79.00
Sensible Software	
Bookends—ProDos	65.00
Sensible Grammar	55.00
Sensible Speller—Dos or ProDos	69.00
Sierra On-Line	
Homeword Plus (128K) or HomeWord Filer	42.00
Homeword Speller	30.00
Screenwriter Professional	77.00
Simon & Schuster	
JK Lasser's Money Manager	47.00
Webster's Spelling Checker	36.00
JK Lasser's Income Tax	47.00
Software Publishing	
All Programs For / /e with 128K or / /c	
PFS: Workmates (File/Report/Plan/Write)	139.00
PFS: File, Graph, Report	69.00
PFS: File/Report Bundle	69.00
PFS: Write or Plan *(/ /e, / /c)*	69.00
Sorcim/IUS SuperCalc 3a	99.00
State of the Art	
Electric Checkbook	59.00
GL/AR/AP/Inventory/Payroll	285.00
Stoneware	
DB Master Business Team	185.00
DB Master Business Writer	85.00
DB Master Version Four Plus	165.00
TimeWorks	
Silvia Porter's Financial Planner	69.00
Swiftcalc with Sideways	99.00

Educational Software

Addison Wesley Smart Eyes	36.00
Apple	
Apple Logo / / 128K *(/ /e, / /c only)*	79.00
Bantam Books	
Fantastic Animals or Road Rally USA	24.00
The Complete Scarsdale Medical Diet	24.00
Barron's	
Computer SAT Revised Version	36.00
Brainpower Chipwits or Think Fast	24.00
Broderbund	
Science Tool Kit Master Module	36.00
CBS Software Adventure Master	26.00
America Coast to Coast	24.00
Body in Focus or Dinosaur Dig	24.00
Forecast! or T-Rex	29.00
Goren's Bridge	48.00
Mastering The SAT	59.00
Success w/Algebra (ea.)	21.00
Success w/Math (ea.)	15.00
Davidson & Associates	
Alge-Blaster, Classmate or Math Blaster	27.00
Speed Reader II	37.00
Speed Reader Data A, B, C, or D	11.95
Spell-It or Word Attack!	27.00
Designware	
European Nations & Locations	24.00
Grammer Examiner	26.00
Remember	42.00
Spellicopter or Spellakazam	24.00
States & Traits or Mission Algebra	26.00
The Body Transparent	26.00
DLM	
Alligator Mix or Demolition Division	18.50
Create with Garfield! or Fraction Fuel Up	18.50
Freddie's Puzzles or Number Farm	18.50
Spelling Wiz or Word Invasion	18.50
Fisher Price	
Alpha Build or Logic Levels	16.00
First Man on the Moon	18.00
Peter Rabbit Reading	18.00
Grolier Publishing EduCalc	30.00
Friendly Filer or Easy Graph	24.00
Science Island or Treasure Hunter	24.00
Harcourt Brace, Jovanovich	
Computer SAT	46.00
Intracorp, Inc.	
Intracourse Analysis Module	36.00
Intracourse Compatibility Module	29.00
Intracourse Analysis & Compatibility Module	59.00
Learning Company	
Addition Magician	21.00
Bumble Plot, Games, or Reader Rabbit	24.00
Gertrude's Puzzles or Secrets	27.00
Juggle's Rainbow	18.00
Magic Spells or Word Spinner	21.00
Moptown Hotel, Parade, or Number Stumper	24.00
Robot Odyssey I or Rocky's Boots	30.00
Milliken	
Addition, Division, or Subtraction Sequences	21.00
The Milliken Word Processor	42.00
Mindscape Crossword Magic	30.00
Keyboard Cadet or Luscher Profile	24.00
Perfect Score SAT	42.00
Tink's Adventure, Mazes or Sub. Fair	18.00
Peachtree/Eduware	
Algebra 1, 2, 3, or 4	21.00
Algebra 5 or 6	26.00
Decimals or Fractions	22.00
Compu-Read	16.00
Compu-Math: Arithmetic Skills	29.00
Introduction to Counting	19.00
PSAT or SAT Word Attack Skills	16.00
PSAT/SAT Analogies	17.00
Spelling Bee w/Reading Primer	21.00
Writing Skills 1, 2, 3, 4 or 5	21.00
PinPoint Micro Cookbook *(//e or //c)*	26.00
Appetizers, Desserts, Soups & Salads	11.95
Random House	
Charlie Brown Typing is a Ball	21.00
Garfield Double Dares	21.00
Garfield Eat Your Words	21.00
Mr. & Mrs. Potato Head	21.00
Peanuts Math Matcher	21.00
Snoopy Writer	21.00
Sensible Software Report Card	33.00
Scarborough Systems	
Build A Book About You	16.00
MasterType New & Improved	24.00
MasterType's Writing Wizard *(128K)*	48.00
MasterType's Writer *(5¼" or 3½" Version)*	42.00
MasterType's Filer	24.00
Original Boston Computer Diet	48.00
Picture Writer or Songwriter	24.00
Scholastic Wizware	
Agent U.S.A. or Turtle Tracks	24.00
Fact & Fiction Tool Kit / /c	23.00
Logo Robot or Kids at Work	15.00
Math Assistant I or II	62.00
Microzine 1,2,3,4,5,6,7, or 8	23.00
Operation: Frog or Logic Builders	24.00
Story Tree or Story Maker	22.00
Simon & Schuster Chem Lab	24.00
Lovejoy's Preparation for SAT	42.00
Typing Tutor III	30.00
Spinnaker Adventure Creator or Trains	18.00
Counting Parade or Sum Ducks	18.00
Delta Drawing	24.00
File & Report or Spreadsheet	35.00
Fraction Fever	15.00
Grandma's House	15.00
Homework Helpers: Math Word Problems	30.00
Homework Helpers: Writing	30.00
In Search Of....	20.00
Kidwriter or Alphabet Zoo	18.00
Kindercomp or Kids on Keys	15.00
Mathbusters	18.00
Snooper Troops Case I or II	20.00
Word Processor	30.00

In Connecticut Call 378-3662 or 378-8293

Springboard	
Early Games or Music Maestro	20.00
Fraction Factory or Make a Match	17.00
Mask Parade or Easy as ABC	22.00
Rainbow Painter or Puzzle Master	20.00
Terrapin Terrapin Logo V3.0	52.00
TimeWorks	
Evelyn Wood Dynamic Reader	41.00
Weekly Reader Chivalry	29.00
Exploring Tables & Graphs 1 or 2	20.00
Pic.Builder	24.00
Stickybear Series (ea.)	21.00

Modems

Anchor Automation	
Signalman Express 1200	229.00
Signalman Lightning 2400	349.00
Volksmodem 12	179.00
Apple Computer	
Apple Personal Modem	279.00
Apple / /e,/ /c, or Mac Cable	25.00
Hayes	
Hayes Micromodem / /e	135.00
Hayes 300 Baud Smartmodem / /c	155.00
Hayes 300 Baud Smartmodem	135.00
Hayes 1200 Baud Smartmodem	359.00
Hayes 2400 Baud Smartmodem	575.00
Transet 1000	269.00
Novation	
Novation Apple Cat II	189.00
Novation 212 Apple Cat II	355.00
Novation 212 Upgrade	219.00
Novation 2400 Baud Standalone Modem	479.00
Prentice	
Popcom X-100 *(1200 Baud)*	245.00
Prometheus	
Pro Modem 1200 *(External)*	269.00
Pro Modem 1200G *(Non Expandable)*	199.00
Pro Modem 1200A *(Internal)*	239.00
Pro Modem 300c	129.00
Options Processor or Alphanumeric Display	69.00
U.S. Robotics	
U.S. Robotics Password 1200	199.00
U.S. Robotics Courier 2400	389.00
Zoom Telephonics	
Zoom/Modem / /e	105.00
Zoom/Modem / /e Plus	115.00

Accelerators/Ramcards/Z-80/80 Col.

Advanced Logic Systems	
Add-Ram 16	65.00
Add-Ram 80/64	52.00
Add-Ram 80/256	145.00
Z-Engine 2.2	125.00
CP/M Card	225.00
Apple Computer	
Apple II Memory Expansion Card	225.00
Apple / /e Extended 80 Col. Card	89.00
Applied Engineering	
RamWorks II *(64K to 3MB)*	Call
Z-Ram / /c *(256 or 512K)*	Call
Ramworks RGB Option & 16 Bit Option	Call
TransWarp Accelerator	Call
TransWarp 16 Bit Upgrade	Call
ViewMaster 80	109.00
Z-80 Plus	109.00
Applied Technology Laboratories	
EasyCard Advanced Set (/ /+ or / /e)	239.00
Light Pen w/Cursor Control For EasyCard	159.00
Apricorn Apricorn 64K Extend-It	85.00
Apricorn 16K Ramcard II+	65.00
AST Research MegaRamPlus w/64K	125.00
MegaRamPlus w/256K	179.00
SprintDisk w/256K	189.00
SprintDisk w/512K	269.00
Caribbean Computer	
Extend 80	78.00
Checkmate Technology	
Multiview 80/160	179.00
MultiRam CX (256K)	149.00
MultiRam CX (512K)	189.00
MultiRam / /e (128K)	129.00
MultiRam / /e RGB (128K)	159.00
MultiRam / /e (256K)	149.00
MultiRam / /e RGB (256K)	179.00
MultiRam / /e (512K)	179.00
MultiRam / /e RGB (512K)	215.00
Zee-80A	55.00
Cirtech Flipster-RamCard	275.00
Information Appliance SwyftCard	69.00
Micro Sci Micro Sci 80/64e	69.00
Micro Sci 80/256e	149.00
Microsoft Microsoft Softcard II	265.00
MTC MTC Speed Demon	159.00
Titan Industries Saturn 128K Ram	175.00
Neptune 80 Col. w/64K	185.00
Accelerator / /e w/PinPoint	199.00

Multifunction Cards

AST Research	
Multi I/O Clock/Calendar	99.00
Multi I/O Clock/Calendar/2 Ser. Ports	139.00
Checkmate Technology Gambit	Call
Prometheus VERSAcard	135.00
Quadram Multicore w/OK	149.00
Multicore w/256K	179.00
Extended Multifunction Board (64K)	159.00
Extended Multifunction Board w/RGB	189.00
RGB Upgrade	45.00
Street Electronics	
Business Card Parallel	155.00
Business Card Serial	135.00
Videx PSIO Dual Function Interface	135.00

Printer Interface Cards

Apple	
Apple Super Serial Card	115.00
Apricorn Apricorn / /c	49.00
Super Serial Card	79.00
Interactive Structures	
Pkaso/U Interface	115.00
Orange Micro	
Serial Grappler Plus	72.00
Grappler+	72.00
Buffered Grappler+	115.00
Grappler / /c	78.00

Imagebuffer 64K *(For Imagewriter II Printer)*	69.00
Hot Link	45.00
Practical Peripherals	
Graphicard	59.00
PrinterFace	45.00
SeriALL Interface Card	95.00
Quadram	
A-PIC Parallel Interface	65.00
A-PIC Parallel Interface w/Color Gr.	75.00
Serial Interface (AB-400)	71.00
Buffered Serial Interface (64K)	99.00
Spies Labs Nice Print	105.00
Street Electronics Aphabits II	79.00
TextPrint	
Print-It! (Parallel or Serial)	125.00
Thirdware	
Finger Print Plus II+,/ /e,/ /c	89.00

Clock/Calendar Peripherals

Applied Engineering	
TimeMaster H.O.	99.00
BSR Interface	39.00
/ /c System Clock	65.00
Practical Peripherals	
Proclock / /e or / /c	119.00
Quadram	
Pro Dos Clock/Calendar Card	59.00
Creative Peripherals	
Seiko Datagraph 2001 w/Time Trax	149.00
Time Trax / /e or / /c	79.00
/ /c System Clock	55.00
Street Electronics Livewire	70.00
Thunderware Thunderclock Plus	105.00
X-10 (USA) Inc.	
X-10 Powerhouse Computer Interface	49.00
Extra Modules *(For Lamps, Wall Swtiches, & Appliances)*	15.00

Video Cards

Video 7	
Color Enhancer / /e w/Dazzle Draw	119.00
Color Enhancer / /c w/Dazzle Draw	89.00
Screen Enhancer / /e	89.00
Screen Enhancer / /c	49.00
Videx Ultraterm *(Standard Density)*	199.00
Videoterm with Soft Switch & Inverse	178.00

Accessories

Kensington System Saver	59.00
Cool+Time	69.00
Curtis Diamond	30.00
Curtis Emerald	36.00
Curtis Ruby	54.00
Curtis Sapphire	47.00
Pico Products	
Tilt & Swivel Monitor Stand/Power Center	59.00
Touch Window by Personal Touch	179.00
Apple Mouse / /e	115.00
Apple Mouse / /c	79.00
Pico Universal Joystick II+, / /e, / /c	25.00
Hayes Mach II Joystick	27.00
Hayes Mach III Joystick	33.00
Kraft Quickstick / /c	49.00
Kraft Joystick	26.00
Digital Paintbrush System	175.00
Muppet Learning Keys	42.00
Koala Pad Plus	72.00
KeyTronic Keyboard KB-200	180.00
Trackhouse Keypad (/ /e *Standard*)	74.00
Trackhouse Keypad (/ /e *Programmable*)	139.00
Mockingboard A Board	65.00
Mockingboard C Board	115.00
Mockingboard D Board (/ /c)	125.00
Echo-II Plus	94.00
The Cricket / /c	68.00
Rainbow Paper Pak (300 sheets)	12.00
ImageWriter Ribbon-Black	4.50
ImageWriter Ribbon-Color	5.00
ImageWriter Rainbow Pack (6 Colors)	27.00
Environmental Software: Apple Skins	
Apple / / c or / / e w/Monitor II Cover	19.00
Apple / / c w/Color Monitor Cover	21.00
Apple / / e Professional System Cover	23.00
Apple / / c, / / e or UniDisk Drive Cover	7.00

Blank Media

5¼" Blank Media	
BASF 5.25" SS/DD *(box of 10)*	10.50
Elephant 5.25" SS/DD *(box of 10)*	10.50
Verbatim 5.25" SS/DD *(box of 10)*	10.50
Sony 5.25" SS/DD *(box of 10)*	10.25
Maxell 5.25" SS/DD *(box of 10)*	10.25
Nashua 5.25 SS/DD *(box of 10)*	12.50
Memorex 5.25" SS/DD *(box of 10)*	13.00
3M 5.25" SS/DD *(box of 10)*	12.00
Dysan 5.25" SS/DD *(box of 10)*	15.99
3½" Blank Media	
BASF 3.5" DS/DD *(box of 5)*	14.00
Sony 3.5" DS/DD *(box of 10)*	27.00
Fuji 3.5" DS/DD *(box of 10)*	26.00
Verbatim DS/DD *(box of 10)*	28.00
Maxell 3.5" DS/DD *(box of 10)*	28.00
3M 3.5" DS/DD *(box of 10)*	28.00

Printers

Apple	
ImageWriter II Color Printer	479.00
ImageWriter II 32K Buffer	79.00
ImageWriter II Cut Sheet Feeder	175.00
ImageWriter (Wide Carriage)	475.00
Brother	
HR-15XL (20cps) Daisywheel	309.00
HR-25 (23cps) Daisywheel	489.00
HR-35 (35cps) Daisywheel	729.00
TwinWriter 5	839.00
Fortis/Dynax	
DH-25 (23cps) Daisywheel Par./Ser.	429.00
DX45 Dual Head Printer	839.00
Citizen	
120-D (120cps) W/NLQ 10" Carriage	179.00
MSP-10 (160 cps) 10" Carriage	239.00
MSP-15 (160 cps) 15" Carriage	359.00
MSP-20 (200 cps) 10" Carriage	329.00
MSP-25 (200 cps) 15" Carriage	489.00

Epson	
LX-80 Call	209.00
LX-90 For	Call
FX-85 Most	Call
FX-286 Recent	Call
LQ-800/1000/1500 Low! Low!	Call
SQ-2000 Prices	Call
Juki 6000 (10cps) Daisywheel/Par.	179.00
6100 (18cps) Daisywheel/Par.	339.00
6200 (30cps) Daisywheel/Par.	509.00
6300 (40cps) Daisywheel/Par.	649.00
NEC SpinWriter e.l.f. 360	379.00
SpinWriter 2030P (20 cps)	669.00
SpinWriter 3530P (35 cps)	779.00
P-660 (216cps) Parallel 10"	469.00
P-760 (216cps) Parallel 15"	599.00
P-550 (240cps) Parallel	1049.00
Okidata Okimate 20 Color Printer	Call
Microline 182P/183P	Call
Microline 192P/193P	Call
Microline 292P/293P	Call
Microline 192 Apple/193 Apple	Call
Panasonic	
KXP-1080 (100 cps) NLQ Mode	199.00
KXP-1091 (120cps) NLQ Mode	239.00
KXP-1092 (180cps) NLQ Mode	299.00
KXP-1592 (160cps) NLQ Mode	419.00
KXP-1595 (240cps) NLQ Mode	569.00
KXP-3131 (16cps) Daisywheel	259.00
KXP-3151 (23cps) Daisywheel	399.00
Silver Reed	
EXP-400P (14cps) Daisywheel	189.00
EXP-500P (16cps) Daisywheel	189.00
EXP-550P (20cps) Daisywheel	319.00
EXP-800P (40cps) Daisywheel	659.00
Star Micronics	
NX-10 (120cps) Parallel	259.00
SG-15 (120cps) Parallel	379.00
SD-10 (160cps) Parallel	339.00
SD-15 (160cps) Parallel	449.00
SR-10 (200cps) Parallel	489.00
SR-15 (200cps) Parallel	585.00
Toshiba	
P-321 24 Pin (216cps) Par./Ser. 10"	499.00
P-341 24 Pin (216cps) Par. 15"	779.00
P-341 24 Pin (216cps) Par./Ser. 15"	799.00
P-351 24 Pin (288cps) Par. 15"	1049.00
P-351 24 Pin (288cps) Par./Ser. 15"	1079.00

Disk Drives/Hard Disks

Apple	
Apple ProFile (10 Meg) w/Access. Kit	1139.00
Apple / /c External Drive	229.00
Apple DuoDisk w/Accessory Kit	469.00
Apple UniDisk 3.5 w/Apple / / Utilities	359.00
Apple UniDisk 3.5 w/Catalyst	385.00
Apple Unidisk 3.5 Accessory Kit (II+,/ /e)	59.00
AST Research	
MicroStor 10MB Tape Backup Only	939.00
MicroStor 10 MB Hard Disk Only	939.00
MicroStor 10MB Hard Disk w/Tape	1449.00
Corvus Systems OmniDrive Hard Disks	Call
H & M Disk Drive Services	
EquiDisk+	599.00
737K of storage on each Drive! Includes 2-5.25" Drives w/Controller, Power Supply & Cables. Apple DuoDisk Side By Side Design!	
Micro Sci A2 Full Height	149.00
A5 Slimline / /e	149.00
A5 Slimline / /c	159.00
Micro Sci C2 Controller	45.00
Mitac AD-1 Full Height / /e	139.00
AD-3C Slimline / /e or / /c	129.00

Pico Products	
Apple Half-Height II+,/ /e, / /c *Turn Apple II+, or / /e, Into / /c Compatible Drive!*	139.00
Apple Disk Drive Adaptor Plug	14.00
Quark	
QC-10 Hard Disk / /e, / /c or Mac	799.00
QC-20 Hard Disk / /e, / /c or Mac	1119.00

Monitors

Amdek	
Video 300G 12" Green Monitor	115.00
Video 300A 12" Amber Monitor	119.00
Color Monitor 300 (Composite)	209.00
Color Monitor 600 (RGB)	385.00
DVM III RGB Interface	119.00
Apple	
Color Monitor / /e	289.00
Color Monitor / /c	289.00
Princeton Graphics	
HX-9 9" RGB Color	389.00
HX-12 12" RGB Color	409.00
RGB-80 Interface	140.00
Sakata	
SG-1000 Green	105.00
SA-1000 Amber	115.00
SC-100 Composite Color	149.00
SC-200 RGB Color	379.00
Taxan	
115 12" Hi-Res Green	115.00
116 12" Hi-Res Amber	119.00
220 14" Composite Color	209.00
610 12" Hi-Res RGB Color (510x200)	345.00
620 12" Hi-Res RGB Color (640x200)	385.00
410-80/64 RGB-II Interface	169.00
Teknika	
MJ-22 RGB Color Monitor	259.00

Ordering Instructions

VISA AND MASTERCARD ACCEPTED
To order, call us anytime Monday thru Friday 9:00 to 9:00, Saturday 10:00 to 6:00. For fast delivery if ordering by mail, send cashier's check, certified check or money order. Fortune 1000 & Government checks honored immediately—Personal and other company checks allow 2 weeks to clear. Mastercard & Visa include card # & expiration date. Connecticut residents add 7.5% sales tax. Purchase Orders: All merchandise FOB CT. and Handling. Please call (203) 378-3662 for credit information and terms.

Shipping Charges: Software Only—$3.00 Minimum charge U.S. Mainland. With C.O.D. shipments add an additional $2.00 U.S. Postal, APO, and FPO add 3% ($5.00 Min.). Alaska or Hawaii add 6% ($10.00 Min.). Canadian orders add 10% ($15.00 Min.). Foreign Orders except Canada—Add 18% ($25.00 Min.).

Hardware—Please call for shipping charges.

Our Policy: We do not guarantee machine compatibility. All products are new and include factory warranty, therefore ALL sales are final. Defective software will be replaced by the same item only. Defective hardware will be replaced or repaired at our discretion. Prices & availability subject to change without notice. Products purchased in error, subject to 20% restocking fee. All returns must have an authorization number. Call (203) 378-3662 to obtain one before returning defective products for replacement.

PROGRAMS PLUS

Visit Our New Showroom: Exit 32 Off I-95
Station House Square
2505 Main Street
Stratford, Conn. 06497
Telephone Hours: Monday-Friday 9-9;
Saturday 10-9
Showroom Hours: Monday-Friday 9-6;
Saturday 10-6

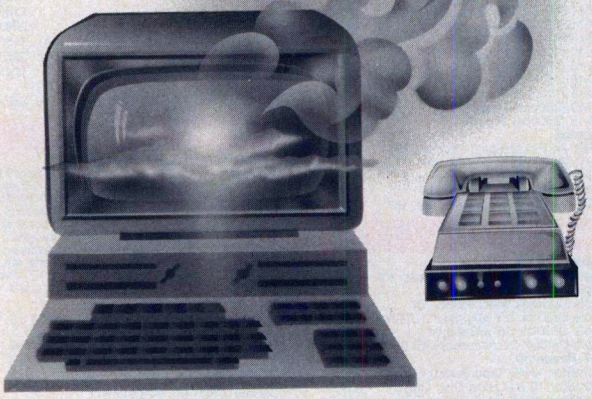
Orders Only TOLL-FREE **1-800-832-3201**

MACINTOSH 512K/MACPLUS SYSTEMS CALL
APPLE II E PROFESSIONAL SYSTEMS . CALL
APPLE II C SYSTEMS . . . . . CALL
Up to 60% Off Retail

CIRCLE 299 ON READER SERVICE CARD

If you compute after dark...

...switch to the magic of GEnie™ and stay on-line longer, for less!



Introducing GEnie, the General Electric Network for Information Exchange. It's part of General Electric Information Services—the largest commercial teleprocessing network.

Now the power of GEnie stands ready to bring a little magic into the life of PC owners just like you. And for potentially much less than other on-line information services.

With GEnie, you pay no hidden charges or monthly minimum fees. You pay only for the actual time you're on-line and the $18.00 registration fee. Nothing more.

Compare & Save

	Services						Pricing			
	SIGs/User Groups	Electronic Mail	CB Simulator	Computing News	Games	2400 baud access	Registration fee	Monthly minimum	Non-prime time rates 300 baud	Non-prime time rates 1200 baud
GEnie*	**X**	**X**	**X**	**X**	**X**	**X**	**$18.00**	**none**	**$5.00**	**$5.00**
CompuServe	X	X	X	X	X	X	$39.95	none	$6.25	$12.75
The Source	X	X	no	X	X	X	$49.95	$10.00	$8.40	$10.80

**Rates and Services shown in effect 12/85. Non-prime time rate applies Mon–Fri, 6pm–8am local time, all day Sat., Sun., and nat'l. holidays. Subject to service availability. Additional surcharge applies for 2400 baud service.*

Save up to 60%

Check out the chart above and compare it for yourself. You'll find GEnie can deliver all of your favorite services for an incomparable price at incomparable savings!

Put the power of GEnie at your command

- Discuss the latest in computer products and accessories or download public domain software with GEnie's ***RoundTable™ Special Interest Groups.***
- Meet new people, share ideas with friends—old and new—with ***LiveWire™***, GEnie's CB simulator that has everybody talking!
- Get your message across and back again with ***GE Mail™***, GEnie's electronic mail service.
- Organize a local, regional or national get-together in one of GEnie's 40 "conference rooms" with GEnie's ***Business Band Real-Time Conferencing.***
- Go one-on-one with classic computer games, match your wits against others with multi-player games, or download for future play in GEnie's ***Game Room.***
- Stay in touch with what's new on the microcomputer scene, courtesy of GEnie's news service, ***News and Commentary.***

GEnie can take you to new highs in speed and keep you there. Because our non-prime time rate for 300 OR 1200 baud is only $5.00 an hour. And that means you save 20 to 60%. Or if you prefer, 2400 baud service is now available.

With services and prices like these—talk, read, learn, or play to your heart's content. Because now you can keep your eyes on the screen, not on the clock.

With your personal computer, modem, communications software, and telephone, you already have everything you need to make GEnie come to life. So why not Sign-Up today. Let GEnie bring a little magic into your life!

Sign Up From Your Keyboard Today 4 Easy Steps:

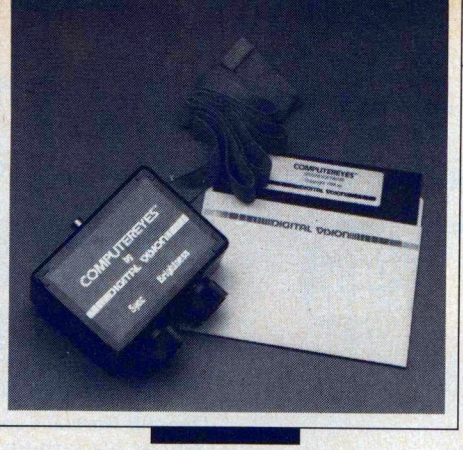
1. Have ready your VISA, MasterCard or checking account number to set up your personal GEnie account.
2. Set your modem for half duplex (local echo)—300 or 1200 baud.
3. Dial **1-800-638-8369.** When connected, enter HHH
4. At the U# = prompt, enter **XJM11943,GENIE** then RETURN.

No Modem Yet? Need more information or assistance? We can help! Call **1-800-638-9636, ext. 21.**

Get on-line with GEnie. And stay longer, for less.

GE INFORMATION SERVICES

General Electric Information Services Company, U.S.A.



Quick Take

BY ROBERTA SCHWARTZ

ComputerEyes

An easy-to-use, no-frills video digitizer for your Apple II

What's that you say? You'd like a video digitizer, but you don't have any slots left in your Apple II Plus or IIe? You'd like a digitizer, but you have an Apple IIc? You've looked around, and every system you've seen involves complicated hardware and software? Look again.

ComputerEyes is an inexpensive video-acquisition system that's available for the entire Apple II family of computers. Besides the standard hi-res software, it has optional packages to take advantage of the IIc's or 128K Apple IIe's double hi-res or to create images that are compatible with The Newsroom or The Print Shop.

The system comes with a one-year warranty and a comprehensive 30-page manual that includes a detailed section on operating ComputerEyes from your own programs.

Before I go any further, I should interject that I'm assuming you're familiar with the ins and outs of video digitizers. If not, I'd suggest that, before you read this article, you take a look at "Eyes for your Apple," *A+*, March 1986, in which Anthony Reveaux presented an overview of the digitizing process, applications for digitized images, as well as a review of three other Apple II video digitizers.

The ComputerEyes module is a small (roughly 2½ × 3½ × 1½-inch) black box. Connecting the box to your Apple is a snap. For the II, II Plus, or IIe, it plugs directly into the game I/O socket. If you use a game-port extender, you don't even have to open your Apple. On the Apple IIc, it plugs into the rightmost two connectors on the rear of the computer (serial port 2 and the joystick socket). The module plugs into your video source via a standard RCA-type phono jack.

The ComputerEyes module has two knobs, labeled Sync and Brightness. The first time you boot the software, you select Adjust Sync from the menu and turn the sync knob until you see the message In Sync on your monitor. You probably won't have to adjust the sync again unless you change your video source.

The Software

Every time you boot the ComputerEyes disk, you're offered the option of operating the DOS 3.3 or ProDOS version (both are on the same disk). You choose the disk-operating system that the software into which you plan to load your images uses. From the menu you can select Help, Adjust Sync, Normal Capture, 4-Level Capture, 8-Level Capture, View Current Image, Save to Disk, Load from Disk, Catalog, Demo, and Exit.

Normal Capture gives you a high-contrast, black-and-white image. The scan takes approximately five seconds (see figure 1).

The 4-Level Capture, which takes about 22 seconds, gives you synthesized gray levels. The final picture is generated from four high-contrast images that are taken at different thresholds (like different exposures or f-stops with a camera). The system then merges these images together with different "masks" (number of pixels lit), corresponding to different gray levels.

The 8-Level Capture, which takes approximately 45 seconds, is similar to the 4-Level, but with smoother gray tones (see figure 2).

You can save images to disk as standard 34-sector files or you can pack them. The number of sectors a packed image uses varies according to its complexity.

Using the System

Let's assume that you're using a camera as your video source. You set the object that you want to digitize in front of the camera and illuminate it. (Generally, video digitizers require a strong light source. I've used some that were ineffective unless I had two or three bright spots illuminating the subject. I was amazed to find that with this system, I got satisfactory images in natural daylight or under a 75-watt bulb.) Next, you select Normal Capture. If the captured image is too bright or too dark, you use the brightness knob on the module to change it; if it's out of focus, you adjust your camera. You repeat these steps until you have a satisfactory picture. That's all there is to it; go on and capture all the images you want.

ComputerEyes is a slow scan device—it acquires an image over several video frames, rather than just one. Therefore, it isn't suitable for rapidly changing images. If you want to capture your golf swing, this is not the system for you. If you're a professional artist who needs complete control over the image, you'll probably want to look elsewhere. This system doesn't offer any frills. You can't adjust the picture size, alter the gray-scale settings or patterns, and so on.

Attention all FX80, FX100, JX, & RX owners:

You already own half of a great printer

Now Only $79.95

Now for $79.95 you can own the rest. You see, today's new dot matrix printers offer a lot more.

Like an NLQ mode that makes their letters print almost as sharp as a daisy wheel. And font switching at the touch of a button—in over 160 styles. But now, a Dots-Perfect upgrade kit can make your printer work like the new models in minutes. At a fraction of their cost.

Call now and use your Visa or Master Card. Don't replace your printer, upgrade it!

1-800-368-7737

In California: 1-800-831-9772

Sample of letter with Dots-Perfect

Dots-Perfect

Sample of letter without Dots-Perfect

Dresselhaus

837 E. Alosta Ave., Glendora, CA 91740 Tel: (818) 914-5831

An upgrade kit for EPSON FX, JX and RX printers

EPSON is a trademark of EPSON America, Inc.

CIRCLE 339 ON READER SERVICE CARD

Did You Know...

that A+ readers use their Apple for more than one application? Many use their system for Word Processing and Entertainment, or Business and Education, or Graphics and Accounting.

Are you an Apple Multi-User?

Figure 1: Normal Capture gives you a high-contrast, black-and-white image.

Figure 2: Double-hi-res image. The 8-Level Capture is similar to 4-Level but has smoother gray tones.

It has no color commands. Once you've captured and saved your image, however, you can use other software to enhance it.

If you want to capture images for use in a database or word-processing program, for electronic surveillance, to record measurements, for graphics applications, or just for fun, then you should consider ComputerEyes. Standard hi-res images, because of the Apple's resolution, are not very detailed, but the double hi-res images, with twice as many pixels, are excellent. The system is inexpensive, compact, and easy to use, and it creates satisfactory images with minimal lighting.

Would I buy it? Yes, I just did. +

Roberta Schwartz is a free-lance computer-graphics artist. She teaches at the New School in New York City and is coauthor of a book on Apple computer graphics.

PRODUCT INFORMATION

ComputerEyes
Digital Vision, Inc.
14 Oak Street, Suite 2
Needham, MA 02192
(617) 444-9040
List Price: $129.95 without camera; $399.95 with camera and cable
Requires: Apple II, II Plus, IIe, or IIc video source

CIRCLE 351 ON READER SERVICE CARD

SILICON EXPRESS DISKS SS/DD 7.95 DS/DD 8.95

VERBATIM OR MAXELL SS/DD 13.95 DS/DD 16.95

ELEPHANT SS/SD 7.95 SS/DD 8.95 DS/DD 9.95

DATACASE 8.95

INSIDE OHIO 1-800-225-0755

YOUR TOLL FREE ACCESS OUTSIDE OHIO

1-800-228-0755

CALL...FOR THE BEST PRICES...
BEST DELIVERY...
We have hundreds of other programs in stock at Fantastic savings.

SILICON EXPRESS

ALL NEW STORE WITH EXPANDED WAREHOUSE

Adventure Const.	30.75
Algeblaster	26.95
Algebra I thru IV	ea. 26.95
Algebra V & VI	34.95
Alphabet Zoo	18.95
Alpha Plot	24.89
A Mind Forever Voy.	30.95
Archon I or II	22.45
ASC II Express	72.50
Assembly Lines Bk.	16.95
Auto Duel	37.95
Auto Works	27.95
Back-it-up III	42.00
Bag of Tricks #2	28.00
Ball Blazer	23.49
Bank Street Filer	38.95
Bank Street Mailer	38.95
Bank Street Writer	38.95
Bank Street Speller	38.95
Bard's Tale	28.50
Baron	22.50
Beagle Bag	14.95
Beagle Basis	17.95
Beagle Graphics	29.95
Beneath Apple DOS	13.95
Bnth. Apl. Pro DOS	13.95
Big U	16.95
Black's Law Dict.	64.95
Blazing paddles	27.00
Bookends	64.95
Bookends Extended	94.95
Borrowed Time	22.00
Breakthru Ardennes	41.95
Carmen Sandiego	22.45
Carriers at War	30.75
Captain Goodnight	19.45
Chshp. Load Runner	19.45
Chart 'n Graph Tlbx.	23.95
Clip Art Vol. 1	15.95
Clip Art Vol. 2	21.95
Complete Graphics	47.89
Computer Asbush	41.95
Computer Baseball	25.89
Computer Quarterback	27.95
Copy II +	18.50
Crossword Magic	30.00
Crusade in Europe	22.95
Crypt of Medea	21.95
Cut & Paste	23.00
Cutthroats	23.69
Database Toolbox	23.95
Dazzle Draw	33.95
D-Code	19.95
Deadline	28.00
Decision in Desert	19.95
Delta Drawing	27.95
DiskQuick	14.95
Dollars & Sense	66.50
DOS Boss	11.95
Double-Take	17.95
Dragonworld	23.00
Eagles	27.95
Early Games	15.95
Easy as ABC	20.95
Eidolon	23.50
Enchanter	23.69
Essential Data Dup	41.95
Europe Ablaze	30.75
Extra K	19.95
F-15 Strike Eagle	19.45
Facemaker	17.95
Family Roots	149.95
Fantavision	26.95
Farenheit 451	27.49
Fat Cat	17.95
Fighter Command	41.95
Financial Cookbook	31.00
Flex Type	14.95
Flight Sim. II	33.89
Fontrix	53.25
Fntpaks 1 thru 13	ea. 13.00
Forecast	34.00
Fontworks	34.95
Fraction Factory	15.95
Fraction Fever	17.95
Frame-Up	14.95
Game Maker	34.95
Gato	20.45
Geopolitique 1990	25.89
Gertrude's Puzzles	25.00
Gertrude's Secrets	25.00
Goren Bridge	51.95
Ghostbusters	22.00
GI Joe	19.95
Graphics Department	64.95
Graphics Expander	21.95
Graphworks	57.95
GPLE	24.95
Guadalcanal	41.95
Hacker	27.95
Handlers Package	69.95
Hey Diddle Diddle	17.95
Hitchhiker's Guide	22.00
Home Accountant	47.95
Homeword +	41.00
Homeword Filer	41.00
Image Printer II	34.95
Impossible Mission	23.50
Infidel	26.00
I.O. Silver	14.95
Jeeves	29.95
Juggle's Rainbow	18.95
Kamfgrupe	41.95
Karateka	19.45
Kids on Keys	17.95
Kid Writer	18.89
Kinder Comp	17.95
Knight of Diamonds	19.50
Knights of Desert	27,95
King's Quest I or II	29.95
Koronis Rift	23.49
Legacy of Llylgamyn	22.50
List Handler	39.95
Little Comp. People	27.95
Locksmith	56.95
Lode Runner 19.45	
Magic Spells	20.75
Make a Match	15.95
Man. Your Money	102.00
Mask Parade	20.95
Mastering the GRE	104.95
Mastering the SAT	69.95
Mas. of the Lamps	21.95
Master Type	24.89
Math Blaster	26.95
Math Maze	27.95
Medical Dictionary	64.95
Megaworks	64.95
Merlin	33.69
Merlin Pro	54.95
Merlin Combo	63.95
Micro Cookbook	21.45
Micro Lg. Baseball	22.50
Millionaire	22.50
Minipix	14.69
Moebius	34.95
Monty Plays Scrabble	32.95
Mouse Budget	39.95
Mouse Calc	86.95
Mouse Desk	22.45
Mouse Word	74.95
MouseWrite	71.95
Most Amazing Thing	22.95
Multi Disk Catalog	17.95
Multiplan DOS 3.3	65.95
Munch-A-Bug	23.95
Murder by the Dozen	21.99
Music Construction	24.75
NATO Commander	19.45
Net Worth	48.89
Newsroom	30.50
One-On-One	24.50
PFS: File	69.95
PFS: First Success	126.00
PFS: Graph	69.95
PFS: Plan	69.95
PFS: Report	69.95
PFS: Workmates	174.95
PFS: Write	69.95
Phantasie	27.95
Piece of Cake Math	15.95
Picture Builder	23.99
Pinball Construction	21.50
Pinpoint	39.95
Pitstop II	23.50
Pixit	31.89
Planetfall	22.00
Practicalc II	48.95
Prince	48.95
Printographer	23.95
Print Shop	26.69
Pr. Shp. Gr. #1,2 or 3	13.95
Print Shp. Companion	21.95
Print Shop Refill	12.25
Probyter	17.95
Prof. tour golf	25.89
Program Writer	34.95
Pronto DOS	14.95
Quicken	51.95
Rambo	41.95
RDF	24.95
Reach for the Stars	28.50
Reader Rabbit	25.95
Reforger '88	41.95
Rendezvous w/Rama	23.00
Report Card	32.95
Report Works	64.95
Rescue on Fractalus	23.50
Rescue Raiders	24.95
Robot Odyssey I	28.00
Rocky's Boots	28.00
Sargon III	27.20
Sat (Harcort Brace)	46.99
Science Tool Kit	32.95
Seastalker	22.00
Sensible Grammar	52.95
Sensible Speller	64.95
7 Cities of Gold	24.50
Shadowkeep	23.00
Shape Mechanic	23.95
Sideways	29.95
Silent Service	19.45
Silicon Salad	12.69
Skyfox	24.50
Snooper Trp I or 2	22.95
Solo Flight	19.45
Songwriter	23.89
Sorcerer	26.00
Speed Reader II	36.95
Spell Breaker	34.95
Spellicopter	23.99
Spell It	26.95
Spellworks	29.95
Spitfire Simulator	24.75
Spy Hunter	26.00
Spy vs. Spy	24.95
Squire	22.50
Starcross	28.00
Star Lg. Baseball	20.95
Star Trek	27.95
Sticky Bear ABC	23.75
Basket Bounce	23.75
BOP	23.75
Car Builder	23.75
Math	23.75
Numbers	23.75
Opposites	23.75
Reading	23.75
Shapes	23.75
Spellgrabber	23.75
Town Builder	23.75
Typing	23.75
Story Machine	17.95
Story Maker	24.95
Sum. Games I or II	22.45
SuperCalc 3A	109.95
Super Disk Copy	24.95
Suspect	26.00
Suspended	28.00
Take 1	34.00
Technical Dictionary	39.95
Temple of Apshai Tri.	22.45
Terrapin Logo	59.95
Think Tank	88.89
Thinkworks	64.95
Time is Money	57.45
Tip Disk #1	12.00
Transylvania	19.50
Triple-Dump	18.95
Turbo Pascal 3.0	34.95
Turbo Database Tlbx	27.95
Turbo Tutor	20.50
Tycoon	23.25
Typefaces	10.69
Typing Tutor III	29.75
Ultima III	33.25
Ultima IV	33.25
Understanding IIE	17.95
Understanding II+	15.95
Universal file conv	24.95
Utility City	15.25
Versaform	43.45
Video Toolbox	23.95
Visable 6502	31.75
War in Russia	51.89
Wilderness	38.95
Will Writer	28.45
Winter Games	21.45
Wishbringer	27.95
Witness	22.00
Wizardry	26.50
Wizard's Toolbox	23.95
Wizprint	14.25
Word Attack	26.95
Word Handler	39.95
Word Perfect	125.95
Word Spinner	23.95
World's Great. Bball	19.45
World's Great. Ftball	22.45
Write Choice	26.45
Zork I	22.00
Zork II or III	25.00

HARDWARE

80 Col. 64K Card	49.95
Apple Cat II	184.95
Apple Cat 212	352.95
Compuserve Starter	21.95
Datacase	8.99
Disk Notcher	8.95
Essential Data Dup 4+	CALL
Flip-n-File	13.95
Grappler Buffered	130.95
Grappler +	71.95
Grappler (serial)	71.95
Grappler C	71.95
Interface Disk Drive	144.95
Interface IIC Drive	149.95
Hotlink	54.95
Koala Pad -	70.45
Kraft Joystick	25.95
Lemon	31.95
Lime	48.95
Mach II II+ Joystick	26.20
Mach II IIE Joystick	26.20
Mach III II+ Joystick	32.20
Mach III IIE Joystick	32.20
Micromodem IIE	139.95
Mockingboard A	65.95
Mockingboard B	65.95
Mockingboard C	116.45
Mockingboard D	126.45
Mockingboard A-MAX	38.95
Mltrm CX 256K	169.95
Multiram CX 512K	209.95
Multiram IIEX (16 bit)	154.95
Mltrm CX 256K (16 bit)	279.95
Mltrm CX 512K (16 bit)	319.95
Multiram RGB 64K	154.00
Multiram RGB 256K	194.00
Multiram RGB 512K	234.00
Multiram RGB 768K	274.00
Multiram RGB 1024K	314.00
Multiram IIE 80/64K	124.95
Multiram IIE 80/256K	159.95
Multiram IIE 80/152	194.95
Multiram IIE 80/768	229.95
Multiview II+ 80/160	199.95
Paddlesticks	26.50
Parallel Printer Card	54.95
Print-It	128.00
Prometheus 1200A	254.95
Prometheus 300C	99.95
Super Serial Card	90.95
System Saver Fan	59.95
Thunder Clock	102.95
Video 7 (SCG7)	109.95
Wildcard II	69.95
ZEE 80A Checkmate	63.95
Zoom IIE	109.00

PRINTERS

Star NX-10	259.00
Star SG-15	394.95
Star SD-10	344.95
Star SD-15	474.95
Star SR-10	494.95
Star SR-15	594.95
Star Powertype	344.95
Okidata 182P	229.95
Okimate 20	209.95
Okidata 192P	399.95
Printer Stand	16.95
Colored Printer Rbns	CALL
Color Paper Pack	13.95

MONITORS

Magnavox Monitors	CALL
Amdek Color 600	414.99
Amdek Video 300G	127.99
Amdek Video 300A	137.99
Samsung Color	169.95

YOUR ORDER FORM
SILICON EXPRESS
5955 E. Main St. Columbus, Ohio 43213

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

CHARGE CARD # _____ Exp. Date _____

QTY.	DESCRIPTION	PRICE
	SHIPPING	
	TOTAL	

Computer Type _____

Phone No. _____

No additional surcharge on Mastercard, Visa, or School purchase orders. Personal checks allow 2 weeks. Shipping charges are $3.00 minimum. Ohio residents add 5½% state sales tax. Prices subject to change without notice.

SILICON EXPRESS
5955 E. Main St. Columbus, Ohio 43213
1-614-868-6868

CALL TOLL FREE 1-800-382-2242

NORTHEASTERN Software

7 Trap Falls Rd. Shelton, Connecticut 06484 (See Below)

WE WILL BEAT

- Tap our unmatched selection and inventory of software/hardware for the Mac and Apple (as well as the IBM PC and Commodore Amiga).
- School and corporate purchase orders are welcomed. CALL 1-800-874-1108.
- Special/rush orders. If something you need is not listed, hard to find, or needed in a hurry, CALL 1-800-874-1108.
- Order Status. CALL (203) 375-3860.
- Ask for System Sales when ordering a complete system.
- FREQUENT PURCHASER PROGRAM. Any repeat customer will automatically receive $1 off any order he or she places with us. Please mention to your operator that you are a repeat customer. We value your continuing business. Send in $1,000 worth of invoices (representing previous purchases) and you will receive a coupon worth 1% off any future purchase. With $5,000 worth of invoices, receive a coupon worth 5% off any future purchase.
- No additional charges for credit card orders.
- Convenient hours. 7 days/week: 9AM–11 PM EST.
- FREE AIR EXPRESS SHIPPING. Purchase $150 or more of software and for no additional charge we will ship your products by air courier. Mention this to your operator as you place your order.
- FURTHER DISCOUNTS BY MAIL. Circle the items in our ad you want, send the aid in with the coupon below and receive $ .50 off each item! Cut out a competitor's ad with a lower price and we will give you $1 off his price (subject to the conditions below).

Send coupon and list of items desired to:
DISCOUNT BY MAIL DEPARTMENT
Northeastern Software, 88 Ryders Lane, Stratford, CT 06497

To be eligible for the $1.00 per item discount you must:
1. Fill out all items. 2. Send in our ad with the items you desire circled.

Name_____

Address_____
(Include Company Name)

City_____ State_____ Zip_____

Phone No. at above address_____

Check form of payment
Visa MasterCard C.O.D. Personal Check
Certified Check Money Order

Card No._____ Exp. Date_____

Computer Model _____

Personal and company checks allow 3 weeks to clear. For faster delivery, send cashier's check, certified check, or money order. Shipping—Software ($3.00 minimum). Shipping—Hardware (please call 203-375-3860). COD—Add an addition $2.00. Alaska, Hawaii, Canada, PO, APO, and FPO $5.00 minumum. Foreign orders—$15.00 minimum and 15% of all orders over $100. Mastercard and Visa (please include card no. and expiration date). Connecticut residents add 7.5% sales tax. Prices subject to change without notice. All returns must have a return authorization number. Call 203-375-3860 to obtain one before returning goods for replacement. Defective merchandise replaced with same item only. We do not guarantee compatibility. All sales are final. "Comparable advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees. The $1 off offer only applies to items where Northeastern's price is not already the lowest. Final judgment remains with the manager on duty.

SPECIALS

ORIGIN SYSTEMS
Moebius ... 35.00
Ultima IV ... 33.00
MICROPROSE
Silent Service ... 19.00
MEGAHAUS
Spellworks ... 26.00
Reportworks ... 65.00
Megaworks ... 65.00
MICROSOFT
Applesoft Compiler ... 101.00
OKIDATA
ML 92 ... 315.00
ELECTRONIC ARTS
Autoduel ... 29.00
PBI
Jeeves ... 29.00
PINPOINT PUBLISHING
Pinpoint ... 33.00
MINDSCAPE
Rambo ... 22.00
STEDIWATT
Stediwatt 4 Outlet ... 27.50
AVANTE GARDE
Dave Winfield's Batter Up ... 21.50
AVALON HILL
Under Fire ... 32.00
BASF
Basf SS/DD ... 9.50
V TECH
Laser 128 ... 399.00

COPY PROGRAMS / BOARDS

Back It Up III ... 38.00
CIA Files ... 22.00
Copy II+ ... 17.50
Copy Master II 128K W/GR Dump ... 88.00
Edd IV Plus II/II+/IIE ... 37.00
EDD IV PLUS IIE/W/DUO/UNI DISK
Locksmith 6.0 ... 56.00
Wildcard II ... 69.00

BUSINESS

ADVANCED LOGIC SYSTEMS
The Handlers Package ... 51.00
List or Word Handler ... 36.00
Spellworks ... 26.00
APPLE
Appleworks ... CALL
Applewriter II ... CALL
Apple Access ... CALL
Quickfile ... CALL
APPLIED SOFTWARE TECHNOLOGY
Versaform ... 43.00
ARTSCI
Magic Office Systems ... CALL
Magic Calc 3.3 ... 55.00
Magic Windows ... 86.00
ASHTON TATE
DBase II ... 277.00
BPI
Gen. Acctg. Ar, Ap, Gl, Pay ... 192.00
Gen. Acctg. Ar, Ap, Gl, Pay Pro Do ... 207.00
BRODERBUND
Bank Street Filer ... 39.00
Bank Street Speller ... 39.00
Bank Street Writer 64K or 128K ... 39.00
Bank Street Mailer ... 39.00
CBS SOFTWARE
Stockpak II ... 87.00
CONTINENTAL SOFTWARE
Home Accountant IIC ... 40.00
Home Accountant IIE ... 37.25
Tax Advantage ... 36.00
DOW JONES SOFTWARE
Investor's Workshop ... 76.00
Market Analyzer or Microscope ... 175.00
Mkt. Mgr. or Spreadsheet Link ... 125.00
Membership Kit ... 18.00
ELECTRONIC ARTS
Financial Cookbook ... 29.50
Cut & Paste ... 21.00
FUNK
Sideways ... 30.00
Sideways Pro Dos ... 30.00
HAYDEN SOFTWARE
The Writer ... 22.50
HOWARDSOFT
Real Estate Analyzer III ... 169.00
INTERNATIONAL SOLUTIONS
Mouse Budget ... 38.00
Mouse Calc ... 80.00
Mouse Desk ... 22.50
Mouse Word ... 66.00
Mouse File ... CALL
INTUIT
Quicken ... 49.00
KENSINGTON
Format II Enhanced ... 84.00
LIVING VIDEOTEXT
Think Tank II/IIE ... 75.00
MEGAHAUS
Megaworks ... 65.00
Reportworks ... 65.00
Thinkworks ... 65.00
MANZANITA
Business Accountant System Man ... 66.00
Business Accountant GL/AP/AR/I ... 195.00
Business Accountant Payroll ... 225.00
Adv. Business Acct. System Man ... 66.00
Adv. Business Acct. GL/AP/AR/I ... 255.00
Adv. Business Acct. Payroll ... 275.00
Businessworks Syst. Manager ... 50.00
Businessworks GL/AP/AR/IN ... 205.00
Businessworks Payroll ... 280.00
MECA
Managing Your Money ... 100.00
MICROPRO
Wordstar ... 168.00
MICROSOFT
Multiplan ... 54.00
MONOGRAM
Dollars & Sense IIE ... 63.00
Dollars & Sense IIC ... 66.50
Forecast ... 34.00
NOLO PRESS
Will Writer ... 23.00
PBI SOFTWARE
Graphworks ... 54.00
Jeeves ... 29.00
PEACHTREE
Back to Basics ... 95.00
PINPOINT PUBLISHING
Pinpoint ... 34.00
Pinpoint Spelling Checker ... 34.00
Pinpoint Toolkit ... CALL
PRACTICORP
Practicalc II ... 25.00
PRECISION SOFTWARE
Superbase ... 52.00
QUARK
Word Juggler w/ Lexicheck ... 55.00
Catalyst IIE ... 55.00
ROGER WAGNER PUBLISHING
Mouse Write ... 68.00
The Write Choice ... 25.00
SATELLITE SOFTWARE
Word Perfect ... 77.00
SCARBOROUGH
Net Worth ... 45.00
SENSIBLE SOFTWARE
Bookends or Sensible Speller ... 63.00
The Graphics Department ... 63.00
Sensible Grammar ... 50.00
Report Card ... 30.00
SIERRA-ON-LINE
The General Manager II ... 127.00
Homeword/Speller Bundle ... 40.00
Screenwriter IIE ... 73.00
Homeword Filer ... 40.00
SIMON & SCHUSTER
JK Lassers Income Tax ... 45.00
JK Lassers Money Manager ... 45.00
SORCIM
Supercalc 3A ... 97.00
SOFTWARE PUBLISHING
PFS: First Success ... 125.00
PFS: Access ... 43.00
PFS: File or Graph ... 68.00
PFS: Report or Write ... 68.00
PFS: File & Report ... 71.00
PFS: Workmates ... 141.00
STATE OF THE ART
Electric Checkbook ... 56.00
STONEWARE
DB Master 4 Plus ... 164.00
DB Bus. Pack or Mast Bus Team ... 184.00
DB Master Business Writer ... 83.00
TIMEWORKS
Silvia Porter's Financial Plan ... 55.00
Swiftcalc with Sideways ... 99.00
TURNING POINT
Time Is Money ... 56.00
UNISON
Printmaster ... 28.00
VIRTUAL COMBINATICS
Micro Cookbook II/IIE ... 20.50
VISICORP
Flashcalc ... 50.00

ANIMATION / GRAPHICS SOFTWARE

ACTIVISION
Game Maker ... 29.00
BAUDVILLE
Actors and Actions ... 16.00
Blazing Paddles ... 25.00
Heros and Villians ... 16.00
Pix It ... 27.00
Prince ... 40.00
Shape Library 1, 2 or 3 ... 10.75
Take 1 ... 31.50
BEAGLE BROTHERS
Beagle Graphics ... 29.50
Frame Up ... 14.50
Alpha Plot ... 20.00
Flex Text ... 14.50
Shape Mechanic ... 19.50
BRODERBUND
Dazzle Draw ... 34.00
Fantavision ... 27.00
Print Shop ... 26.75
Print Shop Companion ... 22.50
Graphics Library 1 ... 14.00
Graphics Library 2 ... 14.00
Graphics Library 3 ... 14.00
Refill Paper Pack ... 12.00
DATA TRANSFORMS
Fontrix ... 46.00
Font Packs 1-13 ... 11.50
ELECTRONIC ARTS
Movie Maker ... 25.00
PENGUIN
New Complete Graphics System ... 44.50
Graphics Magician ... 33.50
Cat Graphics ... 20.00
SENSIBLE SOFTWARE
Graphics Department ... 62.00
SOFTWARE PUBLISHING
PFS: Graph Dos or Pro Dos ... 67.50
SPINNAKER
Delta Drawing ... 22.50
SPRINGBOARD
Clip Art Collection Vol. 1 ... 16.00
Clip Art Collection Vol. 2 ... 19.00
Graphics Expander ... 21.00
Newsroom ... 30.00
WEEKLY READER
PIC Builder ... 20.00
Zoom Graphics ... 35.00

UTILITY SOFTWARE / LANGUAGES

BEAGLE BROTHERS
Apple Mechanic ... 15.00
Beagle Basic ... 17.50
D-Code ... 20.00
Disk Quick ... 14.50
Dos Boss ... 12.00
Double Take ... 17.75
Extra K ... 20.00
Fat Cat ... 17.75
Flex Text ... 15.00
GPLE ... 25.00
I/O Silver ... 14.75
Macroworks ... 17.75
Mini Pix ... 14.50
Font Mechanic ... 14.75
Big U ... 16.50
Pro Byter ... 17.00
Pronto Dos ... 14.50
Silicon Salad ... 12.50
Triple Dump ... 19.00
Type Faces ... 10.00
Utility City ... 14.50
BORLAND
Turbo Pascal ... 34.00
Turbo Database Toolbox ... 27.50
Turbo Tutor ... 17.50
KENSINGTON MICROWARE
System Saver ... 56.50
LAZERWARE
Lisa V2.6 ... 52.50
MICROSOFT
Applesoft Compiler ... 101.00
PERFECT DATA
Perfect Data Head Cleaning Kit ... 8.00
QUALITY
Bag of Tricks II ... CALL
ROGER WAGNER
Merlin ... 33.00
Merlin Combo ... 60.00
Merlin Pro ... 54.50
Visible 6502 ... CALL
VIDEX
Ultraterm w/SS Inv. ... 175.00
Video 7 RGB Interface IIE ... 110.00
Video 7 RGB Interface IIC ... 81.00

EDUCATIONAL

ADDISON WESLEY
Smart Eyes ... 34.00
APPLE
Logo II ... CALL
BANTAM BOOKS
Road Rally USA ... 22.50
Scarsdale Diet ... 22.50
BARRONS
Barrons SAT ... 34.00
BRAINPOWER
Chipwits ... 22.50
Thinkfast ... 20.00
BRODERBUND
Science Toolkit ... 32.50
CBS
Adventure Master ... 15.00
Body in Focus ... 20.00
Dinosaur Dig ... 20.00
Mastering the SAT ... 50.00
America Coast to Coast ... 20.00
Goren's Learning Bridge ... 40.00
Forecast or T-Rex ... 25.00
DAVIDSON AND ASSOCIATES
Alge Blaster ... 25.00
Speed Reader II ... 35.00
WORD ATTACK, MATHBLASTER
Or Spell It ... 25.00
All Davidson Data Disks ... 10.00
Classmate ... 25.00
DESIGNWARE
Spellicopter or Spellakazam ... 20.00
States & Traits and European N ... 22.50
Body Transparent or Mission AL ... 22.50
Grammar Examiner ... 22.50
Remember ... 40.00
DLM
Alien Addition or Alligator Mi ... 17.00
Meteor Mult. or Minus Mission ... 17.00
Demolition Division or Dragon ... 17.00
Spelling Whiz or Word Invasion ... 17.00
Freddies Puzzles ... 17.00
Create With Garfield ... 17.00
EDU-WARE/ PEACHTREE
Compu Read ... 15.00
SAT Word Attack Skills ... 15.00
Spelling Bee Games ... 20.00
Algebra 1, 2, 3, or 4 ... 20.00
Algebra 5 & 6 ... 25.00
Writing Skills 1, 2, 3, 4, 5 ... 20.00
Hands on Basic ... 24.50
Introduction to Counting ... 18.50
Fractions or Decimals ... 19.00
FISHER PRICE
Alpha Build ... 15.00
Peter Rabbit Reading ... 17.50
HARCOURT BRACE JOVANOVICH
Harcourt SAT ... 44.00
Harcourt GRE or ACT ... 50.00
GROLIER
Science Island or Treasure Hun ... 22.50
Easy Graph or Friendly Filer ... 22.50
Educalc ... 28.00
HAYDEN
Word Challenge ... 10.00
LEARNING COMPANY
Rocky's Boots or Robot Odyssey ... 28.00

Connecticut Orders Call (203) 929-8522 IN CANADA 1-800-843-0074

ASTERN

ANY COMPARABLE ADVERTISED PRICE BY $1

Number Stumper or Reader Rabbi . . 22.50
Magic Spells or Word Spinner 19.50
Bumble Games or Bumble Plot 22.50
Gertrude's Puzzles or Secrets 24.75
Addition Magician 19.50
Juggles Rainbow 17.00
Moptown Hotel 22.50

MAGNUM
Super Speed Reading 30.00

MECC
Elementary Series (Each) 29.00
Math or Health Series (Each) 29.00

MICROSOFT
Typing Tutor II 14.75

MILLIKEN
Math Sequences (Each) 19.50
Milliken Word Processor 40.00

MINDSCAPE
Perfect Score SAT 39.50
Keyboard Cadet 23.00
Luscher Profile 23.00

SCARBOROUGH SYSTEMS
Build a Book About You 15.00
Boston Computer Diet 45.00
Mastertype's Writing Wizard 38.00
Mastertype's Filer 22.50
Mastertype's New and Improved 22.50
Run for the Money 15.00
Picture Writer 22.50

SCHOLASTIC WIZWARE
Fact and Fiction Toolkit 22.50
Microzine 1-8 (Each) 20.00
Story Tree or Story Maker 20.00
Turtle Tracks or Agent USA 20.00
Operation Frog or Logic Builder 20.00
Logo Robot or Kids at Work 12.50

SENSIBLE SOFTWARE
Report Card 32.00

SIMON AND SCHUSTER
Chem Lab 22.50
Lovejoy's Preparation SAT 39.00
Lovejoy's Preparation GMAT 45.00
Typing Tutor III 28.00

SPINNAKER SOFTWARE
Fraction Fever or Face Maker 14.50
File and Report or Spreadsheet 33.50
Snooper Troops 1 or 2 . . . . . 18.50
Story Machine or Grandma's Hou 14.00
Kindercomp or Kids on Keys 14.00
Spinnaker Word Processor . . . . . CALL
Alphabet Zoo or Kidwriter 16.75
In Search Of 18.50
Adventure Creator 16.75
Trains 16.75
Counting Parade 16.75
Sum Ducks 16.75
Delta Drawing 22.50
Homework Helper: Math Problems 22.50
Homework Helper: Writing 22.50

SPRINGBOARD
Early Games or Piece of Cake 18.00
Make a Match or Fraction Facto 15.50
Mask Parade 20.50
Easy As ABC 20.50
Mathbusters 17.00
Music Maestro 17.00
Rainbow Painter 17.00
Puzzle Master 17.00

TERRAPIN
Terrapin Logo . . . . . CALL
Terrapin Logo 10 Pack 149.00

TIMEWORKS
Evelyn Wood Dynamic Reader 38.75

WEEKLY READER
Exploring Tables and Graphs 17.50
Sticky Bear Series (Each) 20.00

ENTERTAINMENT

ACCOLADE
Beachhead II 19.00
Dam Busters 19.25
Fight Night 17.50
Hardball 17.50
Law of the West 17.50
PSI #5 Trading Post 17.50
Sundog 19.25

ACTIVISION
Alcazar 22.00
Alter Ego 29.00
Master of the Lamps 22.00
Pitfall II 22.00
Great American Road Race 22.00
Computer Discovery Kit 22.00
Star League Baseball 18.00
Borrowed Time 22.00
Countdown to Shutdown 22.00
Ghostbusters or Zenii 22.00
Mindshadow or Space Shuttle 22.00
The Tracer Sanction or Hacker 22.00

GAMEMAKER

AVALON HILL
Under Fire 32.00

AVANT GUARD
Dave Winfield's Batter Up 21.50
Joe Theisman's Football 20.00

BANTAM PUBLISHING
Escape or Cave of Time 21.00
Fourth Protocol 23.00
l'Damiano The Wizard 23.00
Sherlock Holmes Another Bow 23.00

BLUE CHIP
Millionaire, Baron or Tycoon 22.50
Squire 22.50

BRODERBUND
Ancient Art of War 22.50
Captain Goodnight 19.50
Championship Loderunner 19.50
Lode Runner or Karateka 19.50
Mask of the Sun 22.50
Serpents Star 22.50
Where. . . Is Carmen Sad Diego 22.50

CBS SOFTWARE
Murder by the Dozen or Felony 15.00

DATASOFT
Alternate Reality 23.50
Bruce Lee or Conan 20.00
Koronis Rift 23.00
Zorro or the Goonies 20.00
Mr. Do 20.00

ELECTRONIC ARTS
Adventure Construction Set 30.00
Archon 21.00
Archon II or Skyfox 24.00
Autoduel 29.00
Bard's Tale or Reach for the Stars 27.00
Moebius 36.00
Carriers at War 30.00
Europe Ablaze 30.00
Music Construction Set 24.00
One-On-One 23.50
Pinball Construction Set 21.00
Seven Cities of Gold 24.00
Wilderness 31.00
Chessmaster 2000 . . . . . 24.00
Murder on the Zinderneuf 13.00
Super Boulder Dash 21.00
Skyfox 24.00
Lords of Conquest 21.00
Ogre 31.00

EPYX
Ballblazer 22.50
Eidolin 22.50
Rescue on Fractulus 22.50
Summer Games I or II 22.50
Temple of Asphai Trilogy 22.50
Winter Games 22.50
World's Greatest Baseball Game 19.00
World's Greatest Football Game 22.50

HAYDEN
Sargon III 27.00
Computer Novel Const Set 28.00
Holy Grail 28.00
Inca 28.00

INFOCOM
A Mind Forever Voyaging 24.50
Ballyhoo 21.50
Cutthroats or Zork I 21.75
Spellbreaker 27.00
Foolblitzky 24.50
Wishbringer 21.75
Trinity . . . . . CALL
Deadline, Suspended or Starcro 27.00
Hitchhiker's Guide to the Gala 21.00
Planetfall or Enchanter 21.75
Sorcerer, Suspect or Infidel 24.50
Witness or Seastalker 21.75
Zork II or Zork III 24.50

MICROPROSE
Crusade in Europe 22.50
Decision in the Desert 22.50
F-15 Strike Eagle or Solo Flig 19.50
Gunship 19.50
Silent Service 19.00
NATO Commander 19.50
Conflict in Vietnam 22.50
Acrojet 19.50

MICRO LEAGUE SPORTS
Micro League Baseball 22.00
Micro League Managers Disk 22.00

MINDSCAPE
Crossword Magic 28.00
Halley Project 25.00
James Bond View to a Kill 22.00
Rambo 22.00
Steven King The Mist 22.00
Voodoo Island 22.00
Deja Vu 32.00
Forbidden Castle 22.00
Racter 25.00

ONE STEP SOFTWARE
Golfs Best Pinehurst 28.00
Golfs Best St Andrews 28.00

ORIGIN SYSTEMS
Auto Duel 30.00
Moebius 35.00
Ultima III 33.00
Ultima IV 33.00

PENGUIN
Coveted Mirror 19.50
Crimson Crown 19.50
Ootopos 20.00
The Quest or Ring Quest 19.50
Xyphus or Transylvania 19.50

POLARWARE
Sword of Kadash 19.75

RANDOM HOUSE
Alpine Encounter 23.00

SEGA
Frogger 3-Deep or Super Zaxxon 19.50
Spy Hunter or Buck Rogers 25.75
Topper or Star Trek 25.75

SIERRA ON LINE
King's Quest I or II 28.00
The Black Cauldron 23.00
Championship Boxing 20.00

SIMON AND SCHUSTER
Super Zaxxon 20.00
Frogger 3 Deep 20.00
Spy Hunter, Tapper or Star Trek 25.50
Paper Airplane Const. Set 22.50

SIR TECH
Wizardry I 26.00
Wizardry II 19.50
Wizardry III or Wizardry IV 22.50
Wizprint 14.00

SPECTRUM HOLOBYTE
Gato 20.00

STRATEGIC SIMULATIONS
50 Mission Crush 22.50
Baltic 85 or Gemstone Warrior 19.50
Battalion Commander 22.00
Battle for Normandy 22.00
Battle of Antientam 27.00
Battle Group 32.00
Field of Fire 21.75
Geopolitique 1990 . . . . . 22.00
Germany 1985 or Carrier Force 33.00
Imperium Galacticum or Broadsi 22.00
Nam 21.50
North Atlantic 86 . . . . . 33.00
Norway 85 . . . . . 20.00
Objective Kursk or Phantasie 22.00
Phantasie II 21.50
Operation Market Garden 28.00
Questron 28.00
RDF 1985 . . . . . 20.00
Reforger 88 or Kampfgruppe 33.00
Six Gun Shootout 21.50
USAAF 31.00
War in Russia 45.00
Wizard's Crown 22.00

SUB LOGIC
Flight Simulator II 30.50
Night Mission Pinball 20.75

Synapse Software
Brimstone 25.50
Mindwheel or Essex 25.50

TELARIUM
Dragonworld or Shadowkeep 22.00
Farenheit 451 or Amazon 22.00
Rendezvous with Rama 22.00
Nine Princes in Amber 22.00
Perry Mason 22.00
Windham Classics 17.50
Below the Root 17.50
Swiss Family Robinson 17.50
Treasure Island 17.50

BLANK MEDIA

Elephant SS/DD 9.00
Elephant DS/DD 11.00
Verbatim SS/DD 12.00
Verbatim DS/DD 17.50
Memorex SS/DD 11.50
Basf SS/DD 9.50
Maxell SS/DD 12.50

ACCESSORIES/ TURBO BOARDS

APPLE COMPUTER
Apple Mouse IIC . . . . . CALL
Apple Mouse IIE . . . . . CALL
Appleworks Modifier 64K 36.50
Appleworks Modifier 128K 46.50

CH HAYES
Hayes Mach II 25.00
Hayes Mach III 30.00

INNOVATIVE TECHNOLOGIES
Flip N File 50 . . . . . 10.00

KEYTRONICS
KB 200 . . . . . 179.00

KOALA TECHNOLOGIES
Koala Pad 68.00
Gibson Light Pen . . . . . CALL

KRAFT
Kraft Joystick IIC or IIE 24.00

MCT

STEDIWATT
Stediwatt 4 Outlet 27.50
Stediwatt 6 Outlet 30.00
Stediwatt 8 Outlet 33.00
MCT Speed Demon 132.00

STREET ELECTRONICS
Echo II Plus 91.00
Cricket IIC 63.00

TITAN TECHNOLOGIES
Accelerator IIE 203.00
Saturn 128K Ramcard . . . . . CALL

SWEET MICRO
Mockingboard A or B 64.00
Mockingboard C 113.00
Mockingboard D 119.00

DISK DRIVERS

APPLE
Unidisk w/Catalyst . . . . . CALL
Duo Disk w/Acc. Kit . . . . . CALL
IIC ADD ON . . . . . CALL

AMERICAN MICRO
A2 143K 145.00
Slimline IIE 145.00
Slimline IIC 145.00
Controller Card 45.00

QUARK
QC-10 Hard Disk w/Catalyst . . . . . CALL
QC-20 Hard Disk w/Catalyst 1099.00

PRINTER INTERFACES

ORANGE MICRO
Hot Link 45.00
Buffered Grappler 129.00
Grappler Plus 69.00

TEXTPRINT
Print It (Serial or Parallel) 120.00

THIRDWARE
Fingerprint Plus 81.00

PRINTERS

Apple
Imagewriter II w/Acc. Kit . . . . . CALL
Imagewriter 15" w/Acc. Kit . . . . . CALL
Lazerwriter . . . . . CALL

BROTHER
HR-15 XL . . . . . CALL
HR-25 . . . . . 485.00
HR-35 . . . . . 705.00

CITIZEN
MSP-10 . . . . . CALL
MSP-15 . . . . . 345.00
MSP-20 . . . . . 310.00
MSP-25 . . . . . 465.00

EPSON
Spectrum LX-80 . . . . . CALL
Spectrum LX-90 w/Acc. Kit . . . . . CALL
JX-80 Color Printer . . . . . CALL
FX-85 . . . . . CALL
LQ-800 . . . . . CALL
LQ-1500 . . . . . CALL
DX-10 . . . . . CALL
DX-20 . . . . . CALL
AP-80 Imagewriter . . . . . CALL

JUKI
Juki 5500 Color . . . . . CALL
Juki 6100 . . . . . CALL
Juki 6300 . . . . . 648.00

MANNESMAN TALLY
MT-85 . . . . . 355.00
MT-86 . . . . . 410.00

NEC INFORMATION SYSTEMS
All Necs . . . . . CALL

OKIDATA
92P 315.00
182P . . . . . CALL
192P . . . . . CALL
192 Imagewriter . . . . . CALL
193P . . . . . CALL
193 Imagewriter . . . . . CALL
Okimate 20 Color . . . . . CALL

PANASONIC
KXP 1080 . . . . . 210.00
KXP 1091 . . . . . 238.00
KXP 1092 . . . . . CALL
KXP 3131 . . . . . CALL
KXP 3151 . . . . . 395.00

QUME
Letter Pro 20 . . . . . 415.00

SILVER REED
EXP 500P 185.00
EXP 550P 360.00
EXP 770P 655.00
EXP 800 . . . . . CALL

STAR MICRONICS
NX 10 . . . . . CALL
SG 10 . . . . . 215.00
SG 15 . . . . . 369.00
SD 10 . . . . . 329.00
SD 15 . . . . . 439.00
SR 10 . . . . . 479.00
SR 15 . . . . . 579.00

TOSHIBA
P351 . . . . . 1015.00
1340P 390.00
P341 . . . . . 750.00

MONITORS

APPLE
Color Monitor IIE or IIC . . . . . CALL

AMDEK
Color 300 . . . . . 202.00
Color 600 . . . . . 373.50
Video 300A Amber 115.00
Video 300G Green 110.00
DVM III 115.00

PRINCETON
HX-9 . . . . . CALL
HX-12 . . . . . CALL
RGB Interface 138.00

TAXAN
115 Green 108.00
116 Amber 113.00
610 . . . . . 300.00
620 . . . . . 380.00
630 . . . . . 415.00
640 . . . . . 485.00

MULTIFUNCTION BOARDS

APPLIED ENGINEERING
Trans Warp Accelerator . . . . . CALL
Ramworks II . . . . . CALL
RGB Option 97.00
Z RAM IIC . . . . . CALL
System Clock 60.00
Viewmaster 102.00
Timemaster H.O. 96.00
BSR Option 37.00
Z-80 Plus 103.00

APRICORN
Apricorn 16K Ram Card 59.00
Apricorn 64K Extend It 40.00

AST RESEARCH
AST Micro Star (10MG HD W/B.U. . 1750.00
AST Multi I/O 138.00

CHECKMATE TECHNOLOGIES
Checkmate Zee-80A Card 64.50
Checkmate IIE-80 Ram Card 56.50
Checkmate Multiram C (256K) . . . . . CALL
Checkmate Multiram C (512K) . . . . . CALL
Checkmate Multiram IIE 128.00

INFORMATION APPLIANCE, INC.
Swyftcard 68.00

PRACTICAL PERIPHERALS
Proclock IIE or IIC 90.00

QUADRAM
Quadram Pro Dos Clock/Calendar 59.00
Quadram Extended Multifunction . . . 155.00
Quadram Buffered Serial Int. 95.00
Quadram Parallel Interface 65.00
Quadram Parallel Card w/Graphi 70.00
Quadram 80 Column 64K Card 97.00
Quadram Multi-Core Board w/256 . . 175.00
Quadram E-Ram 80 . . . . . 96.00

STREET ELECTRONICS
Alphabits II . . . . . CALL
Livewire w/clock 63.00
Business Card Serial 131.00
Business Card Parallel 154.00

THUNDERWARE
Thunderclock Plus 100.00

CREATIVE PERIPHERALS
Time Trax IIE or IIC 76.00

TELECOMMUNICATION SOFTWARE

APPLE COMPUTER
Apple Access . . . . . CALL

COMPUSERVE
Compuserve Starter Kit 18.00

DOW JONES
Spreadsheet Link 127.00
Dow Jones Starter Kit 23.00

HAYES
Smartcom I 67.00
Hayes Terminal Program 54.00

MICROSTUFF
Crosstalk 94.00

QUARK
Terminus 53.75

SOFTRONICS
Softerm II 113.00

SOFTWARE PUBLISHING
PFS: Access 43.00

SOURCE TELECOMPUTING
Source Subscription Kit 25.00

UNITED SOFTWARE INDUSTRIES
ASCII Express Pro (Dos or Pro 72.50

MODEMS

ANCHOR AUTOMATION
Volksmodem 1200 . . . . . 177.50
Volksmodem IIE, IIC or Mac Cabl 8.00

NOVATION
Apple Cat II 185.00
212 Upgrade Kit 215.00
212 Applecat 345.00

APPLE COMPUTER
Apple Personnel Modem/W/Acckit . . . . . CALL

HAYES
Hayes Smartmodem 300 . . . . . 132.00
Hayes Smartmodem 300 IIC 152.00
Hayes Micromodem IIE W/SC I 128.00
Hayes Smartmodem 1200 . . . . . 358.00
Hayes Smartmodem 2400 . . . . . 570.00

PRENTICE
Popcom X-100 Modem 244.00

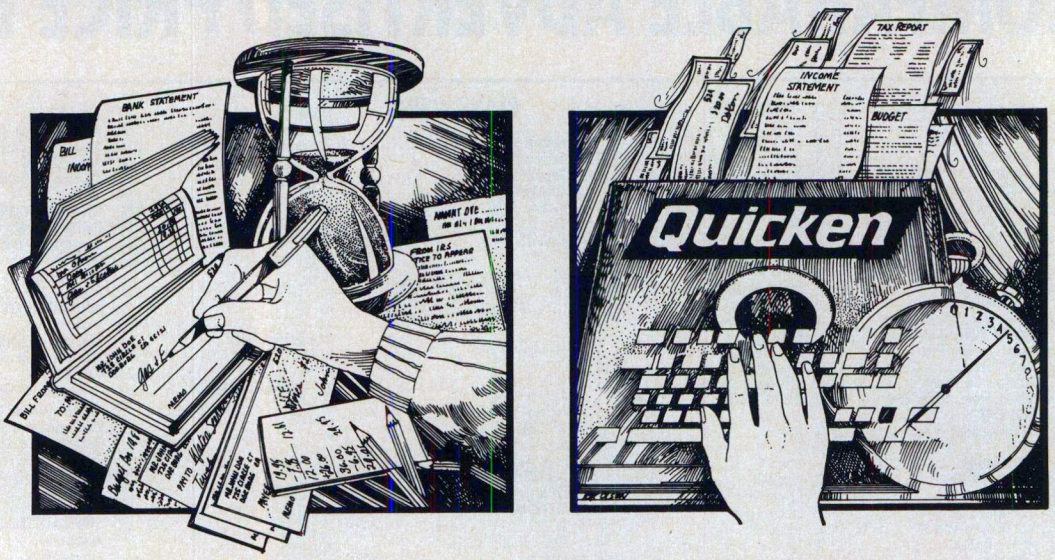
PROMETHEUS
Prometheus 1200 External . . . . . CALL
Prometheus Internal IIE/II+ . . . . . CALL

ZOOM TELEPHONICS
Zoom Modem IIE 90.00
Zoom Modem IIE Plus 100.00

Free Trial! Call 800 624-8742

(California residents call 800 468-8481)

Hours vs. Ours



Cut financial chores in half with Quicken

Quicken Saves Time & Hassle. You don't have to spend hours laboring over routine finances. Quicken is the checking and finance software that does the job fast—up to twice as fast as doing it by hand.

For home or small business, Quicken remembers your regular bills and automatically writes and prints the checks for you. It maintains and reconciles your check register, eliminating tedious clerical work and ensuring complete, accurate records. Quicken also tracks and reports on business expenses and tax deductions.

AppleWorks™ Makes It Easy. Quicken uses the same filecard menus and Open Apple commands as AppleWorks, so it's very easy to use. Quicken also transfers data to AppleWorks spreadsheets, letting you create custom financial reports, such as profit and loss statements, budgets, and more.

Banks Endorse Quicken. Quicken works with **any** checking account from **any** bank, savings and loan, or credit union. It's also the only software endorsed and sold by major banks across the country, including Wells Fargo Bank, United Banks of Colorado, Shawmut, Mellon Bank, First National Bank of Maryland, Manufacturers National Bank, Texas Commerce Bank, Bank of Hawaii, Fairbury State Bank, Fort Wayne National Bank, and FirsTier Banks.

More Rave Reviews. Banks aren't the only ones to take notice of Quicken's achievements. *A+* magazine called Quicken "...an excellent piece of software in all respects, and with the power of AppleWorks so readily available, it's more than good, it's indispensable."

Free Trial Offer! The most important endorsement is yours. That's why we invite you to try Quicken free. Call us and we'll send you the complete Quicken product, including disks, manual, and sample checks. If Quicken doesn't save you hours of time and hassle on your finances, just return it within 30 days and owe nothing.

TO TRY QUICKEN FREE
CALL 800 624-8742 TOLL-FREE
(California Residents Call 800 468-8481)

Quicken retails for $79. Your credit card will not be charged for 30 days after receipt of Quicken. Allow two weeks for delivery. $3 for shipping and handling, and state sales tax where applicable will be added.

Quicken runs on Apple® IIc and IIe* (IIe requires extended 80-column card). One or two floppy disk drives. Also works on UniDisk™ 3.5. Quicken works on any printer. To order checks, fill out form in Quicken box. Quicken handles an unlimited number of checking accounts, and categorizes by words, numbers, or codes.

*Also IBM® PC, XT, AT.

Intuit, 540 University Avenue, Palo Alto, CA 94301 (415) 322-0573

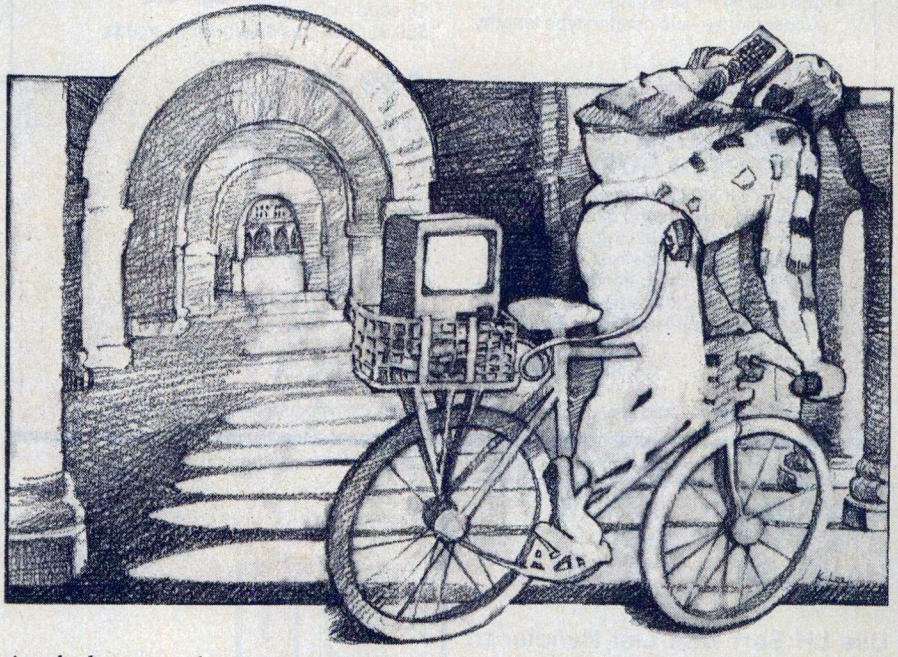
Quicken is a trademark of Intuit. Apple is a registered trademark of Apple Computer, Inc. AppleWorks and UniDisk are trademarks of Apple Computer, Inc.
IBM is a registered trademark of International Business Machines Corp.

CIRCLE 108 ON READER SERVICE CARD

BY DAVID D. THORNBURG

MIND WHEELS AROUND THE WORLD

The International Apple University Consortium conference in England



Last March I attended a Wheels for the Mind conference, a meeting of the International Apple University Consortium, at Cambridge University in England. The purpose of this meeting was to allow AUC members from around the world to share with each other their experiences with campus-based Macintoshes. Participants from more than 30 countries spent several days listening to speakers, attending seminars, and seeing products at a third-party expo, all through the generous support of Apple.

When I was first asked to speak at this conference, I was surprised to find that the AUC was an international phenomenon. I had thought this activity was restricted to a select group of colleges and universities in the United States. It was thus a pleasant surprise to find that the campus Macintosh is as popular in Sweden and Australia as it is in Palo Alto and Boston.

The Mac is an expensive machine in Europe, not because its price is so high, but because taxes take such a bite and (in the United Kingdom, at least) wages are so low. For example, it takes about two weeks for an American professor to earn enough to buy a Mac. A colleague in England may have to work for several months to make the same purchase.

Any cost impediment to the purchase of this computer outside the U.S. was not in evidence at this conference, however. In fact, the level of commitment was probably higher than it would have been in the States, simply because these people had invested so much just to get their computers in the first place. Therefore, attendees came with enthusiasm and a wealth of information to share.

The Conference

Conference participants attended a combination of keynote addresses, AUC presentations, seminars, and a vendor expo. The presentations spanned the range from philosophical issues to the practical realities of incorporating the Macintosh into the classroom.

The campus Macintosh is as popular in Sweden and Australia as it is in Palo Alto and Boston.

The schedule of events was so packed that little time remained for the idle discussions in the hallways that are so important at conferences. As a result, conference mealtimes and receptions were alive with animated conversation.

The Presentations

Since the meeting was an Apple-sponsored event, one might have expected a glossy show of the type Apple sometimes puts on in the U.S. In fact, Apple's presence was understated. It portrayed itself as a partner with the universities, not as a slick sales organization pitching hardware.

This sense of partnership revealed itself in several ways. For example, Apple speakers were in the minority overall. Even the keynote addresses were split between Apple representatives (John Sculley, Jean-Louis Gassée, Alan Brightman, and Mike Spindler) and outsiders (Roger Schank from Yale, and me).

John Sculley reiterated Apple's well-known commitment to educa-

ILLUSTRATION BY KYOUNG JA LEE

COPY II PLUS™

THE BEST, MOST COMPLETE ProDOS-DOS UTILITIES.

- Copy files, disks, even entire subdirectories.
- Undelete ProDOS and DOS files.
- Fast 2-pass disk copy on Apple *IIe, IIc* or Laser 128.
- Tree display for selecting subdirectories—no need to type lengthy "prefixes."
- Alphabetize catalog.
- Convert DOS to ProDOS & vice versa.
- And many more.

BACKUP YOUR PROTECTED SOFTWARE.

With COPY II PLUS' fully automatic bit copier, simply type in the name of the program you want to backup and COPY II PLUS does the rest. (We update COPY II PLUS often to handle new protections; you as a registered owner may update at any time for $15 plus $3 s/h.)

Parameters for hundreds of programs are right on disk. Also includes a track editor, sector editor and HI-RES disk display.

COPY II PLUS is supplied on a standard ProDOS diskette. Runs on Apple II, II+, *IIe, IIc* and Laser 128. Requires at least 64K and one or two disk drives.

Call 503/244-5782, M–F, 8–5:30 (West Coast time) with your MasterCard VISA in hand. Or send a check for $39.95 U.S. plus $3 s/h, $8 overseas.

$39.95

Central Point Software, Inc.
9700 S.W. Capitol Hwy., #100
Portland, OR 97219

Central Point Software INCORPORATED

CIRCLE 184 ON READER SERVICE CARD

Backup utilities also available for the IBM, Macintosh, Commodore 64/128 and Atari ST.

ANNOUNCING A NEW UTILITY FOR LIST HANDLER...LH SORT!

Use LH Sort with List Handler to achieve greater productivity.

☑ **UNLIMITED MULTI-LEVEL SORTS.**
For example, sort by last name within zip code.
☑ **SORT TO DISK.**
Retain all your permanently sorted records on disk.
☑ **RECORD COUNTS.**
Provides a numerical count of how many records you have in your List Handler data base.

LH Sort is available through mail order at the SPECIAL INTRODUCTORY price of $39.95, plus $3.00 Shipping and Handling.

☐ Yes! Please RUSH me a copy of LH SORT.
Make checks or money orders payable to: Magellan Group, Inc. 1327 Howard Avenue, San Carlos, CA 94070 (415) 592-1040

NAME _____
ADDRESS _____
CITY _____ STATE _____ Zip _____
PHONE ( ) _____

☐ I'm interested, but would like more information.
LH SORT is NOT copy protected. Dealer inquiries welcome.
CA residents add 6½% Sales Tax. List Handler is a trademark of Advanced Logic Systems. LH Sort is a trademark of Magellan Group, Inc.

CIRCLE 275 ON READER SERVICE CARD

Did You Know...

that the average A+ reader has invested more than $5,200 in their Apple system?

tion and suggested that the personal computer could break down the traditional walls between the arts and the sciences, leading to a holistic approach to education.

Jean-Louis Gassée pointed out that there was a lot more to educational computing than setting up a lab full

John Sculley suggested that the personal computer could break down the traditional walls between the arts and the sciences.

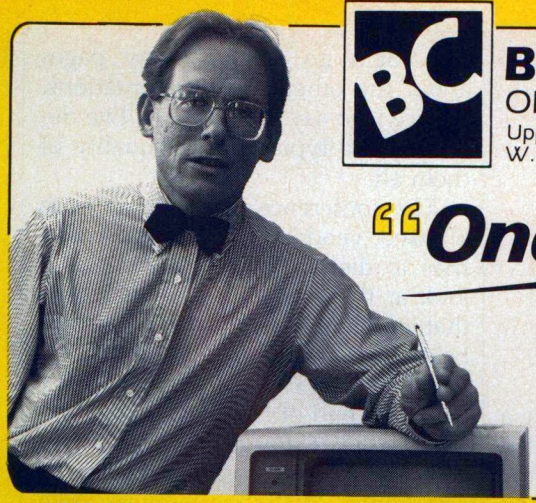
of machines for students to use. He expressed concern that computers would be used as "vending machines for Saran-wrapped homilies." He argued that the computer could change the way we learn—that we had to explore the boundaries of the mind and that the personal computer was the compass and map of that adventure.

Alan Brightman, head of Apple's Office of Special Education, discussed the potential of the computer to help people with special needs become integrated into the mainstream of society. Michael Spindler, president of Apple International, suggested that industry and universities have much to learn from each other. He proposed that exchange programs be set up to let industry people spend some time teaching and for university people to spend time working in industry.

Roger Schank talked about the hype of artificial intelligence, suggesting that today's expert systems were a sham. He proposed directions of research that might lead to the creation of truly intelligent programs. My talk focused on computational metaphors and construction-set programming, topics I have mentioned in this column before.

From Philosophy to Practice

If the keynote addresses were philosophical in tone, most of the AUC presentations and panel sessions were practical. For example, Jean-Marie Hullot of France showed a LISP-based program he had developed to let programmers assemble user interfaces from a construction



BUSINESS COMPUTERS
OF PETERBOROUGH Gollan Co., Inc.
Upper Union St. P.O. Box 94
W. Peterborough, NH 03468-0094

Absolutely NO Additional Charges *

"One price, free freight, in stock, and that's my promise."

William F. Gollan
President

Member Better Business Bureau

"We'll support, service, and warranty everything we sell and stand behind it 100%."

MODEMS

D.C. Hayes		***Prometheus***	
Micro Modem IIe SW	144.95	Pro 1200	289.95
Smart 1200	369.95	Pro 1200 A w/sc	264.95
Smart Modem 2400	579.95	Pro 300C	129.95

PERIPHERALS

Apple		***Koala Technologies***	
II E's & II C's & Macs	CALL	Koala Pad +	75.95
Checkmate Tech		***Orange Micro***	
Multiram II E 64K +80	119.95	Grappler +	79.95
Multiram II E 256K +80	154.95	Grappler + w/64k	154.95
Multiram II E 512K +80	184.95	Grappler + RS-232C	79.95
Multiram IIE 1024KRGB+80	299.95	Grappler C	84.95
Multiram IIE 1792KRGB+80	479.95	Hot Link IIc	54.95
Multiram IIEX w/VIP	249.95	Image Buffer II w/64k	74.95
Multiram II CX w/256K	159.95	***Ribbons & Pacs***	
Multiram II CX w/512K	199.95	Apple Imagewriter I/II	28.95
Multiram II CX16 w/256	309.95	Apple Imagewriter I Color Pac BR,PU,BL,GR,RD,YL	32.95
Multiram II CX16 w/512	359.95	Citizen MSP 10/20	28.95
Multiram CX16 Kit w/VIP	209.95	Citizen MSP 15/25	37.95
Curtis		Epson LX 80/90	34.95
All Products	CALL	Epson FX 80/85	28.95
Disks		Epson FX 100/185/286	37.95
BASF SS/DD	15.95	Okidata 82A/92/93	17.95
Maxell MD1 SS/DD	15.95	Okidata 192/193	43.95
3M SS/DD	16.95	***Textprint***	
Memorex SS/DD	18.95	Print It	129.95
Verbatim Bonus SS/DD	13.95	***Thirdware***	
Verbatim Datalifes SS/DD	18.95	Fingerprint +	94.95
Joysticks		Fingerprint + IIc	94.95
Hayes Mach III's	37.95	***Titan***	
Kraft	37.95	Accellorator	219.95
Kraft Quickstick	54.95	128k Ram	179.95
Kensington			
Printer Stand	19.95		
System Saver	64.95		

PRINTERS

Apple		LQ 1000	699.95
Imagewriter II 10"	CALL	***Okidata***	
Citizen		ML 93	339.95
MSP 120D	209.95	ML 182	239.95
MSP 10 160	309.95	ML 183	399.95
MSP 15 160	399.95	ML 192	359.95
MSP 20 200	349.95	ML 192 Image.	389.95
MSP 25 200	499.95	ML 193	484.95
MSP 35 Premier	499.95	ML 193 Image	554.95
Epson America		ML 292	509.95
AP 80 Image	284.95	ML 293	639.95
LX 80	269.95		
LX 80 F/T	289.95	***Silver Reed***	
FX 85	409.95	Exp 500	199.95
FX 286	579.95	Exp 550	329.95
LQ 800	579.95	Exp 800	669.95

BUSINESS SOFTWARE

ALS		Mouse Word	94.95
Spellworks	34.95	***Intuit***	
Apple		Quicken	52.95
Appleworks	194.95	***Kensington***	
Arrays		Format II	91.95
Appleworks Buddies	55.95	***Living Videotext***	
Home Accountant	45.95	Think Tank	82.95
BPI Software		***Megahaus***	
AR, GL, PR, AP, IC (ea)	199.95	MegaWorks	72.95
Prodos Versions (ea)	209.95	Report Works	72.95
Broderbund		Thinkworks	CALL
Bank Street Filer	44.95	***Microsoft***	
Bank Street Mailer	44.95	Multiplan	60.95
Bank Street Speller	44.95	***Monogram***	
Bank Street Writer	44.95	Dollar & Cents	71.95
Compuserve		Dollars & Cents IIc	71.95
Subscription Kit	22.95	Forcast	39.95
Howardsoft		***PBI***	
RE Analyzer	194.95	JEEVES	41.95
Int'l Solutions		Graphworks	62.95
Mouse Budget	59.95	***Quark***	
Mouse Calc	109.95	Catalyst 3.0	64.95
Mouse Desk	39.95	Word Juggler 3.0	134.95

BUSINESS SOFTWARE

Roger Wagner		***Software Publishing***	
Mouse Write	75.95	PFS: WR,GR,RP,PL (ea.)	73.95
Sensible Software		***Sorcim/IUS***	
Graphics Dept.	72.95	Super IIIA	104.95
Sensible Grammar	59.95	***SSI***	
Sensible Speller IV	72.95	Word Perfect	82.95
Sierra On Line			
Homeword +	46.95	***United Software***	
Home Word Filer	46.95	ASCii Express	79.95

UTILITIES & LANGUAGES

Activision		Print Shop Companion	27.95
Kitchen's Game Maker	33.95	Print Shop GL 1,2,3 (ea)	18.95
Baudville		Print Shop Refill Paper	17.95
Actors & Actions	21.95	***Central Point***	
Business	33.95	Copy II +	24.95
Blazing Saddles	30.95	Wildcard	74.95
Heroes & Villans	21.95	***Data Transforms***	
Pixit	35.95	Fontrix	57.95
Prince Color (Epson)	46.95	Font Set(s) (ea)	14.95
Prince Color (Prowriter)	46.95	***Electronic Arts***	
Shape Lib. 1,2,3 (ea)	14.95	Adv. Const. Set	35.95
Take 1	36.95	Music Const. Set	29.95
Beagle Brothers		Pinball Const. Set	27.95
Alpha Plot	27.95	Racing Dest. Set	CALL
Apple Mechanic	20.95	***Funk***	
Bag	20.95	Sideways	36.95
Basic	23.95	***Microsoft***	
Big U	22.95	Fortran-80	129.95
D-Code	27.95	***Mindscape***	
Diskquick	20.95	Mister Pixel's Cartoon Kit	23.95
DOS Boss	17.95	Paint Set	23.95
Double-Take	23.95	Color Me (Main)	23.95
Extra K	26.95	Hugga Bunch	10.95
Fat Cat	23.95	Rainbow Brite	10.95
Flex Text	20.95	Shirt Tales	10.95
Font Mechanic	20.95	Tink Tonk	10.95
Frame-Up	20.95	***Pinpoint***	
GPLE	30.95	Infomerge	49.95
Graphics	35.95	Modem Enh. Kit	19.95
I.O. Silver	20.95	Pinpoint	39.95
Macro Works	23.95	Pinpoint Ram Exp.	19.95
Mini Pix #1	19.95	Pinpoint Spellchecker	39.95
Pro-Byter	23.95	Pinpoint Toolkit	39.95
Pronto DOS	20.95	Point to Point	74.95
Shape Mechanic	25.95	***Roger Wagner***	
Silicon Salad	17.95	Merlin Assembler	42.95
Tip Disk # 1	13.95	Merlin Combo	69.95
Triple Dump	25.95	Merlin Pro	61.95
Typefaces	15.95	***Springboard***	
Utility City	20.95	Graphic Expander VI	27.95
Borland International		Newsroom Clip Art VI	21.95
Turbo Pascal 3.0 (Reg. CPM)	42.95	Newsroom Clip Art V2	24.95
Turbo Tool (Reg. CPM)	34.95	The Newsroom	35.95
Turbo Tutorial (Reg. CPM)	25.95	***Terrapin***	
Broderbund		LOGO	50.95
Dazzle Draw	39.95		
Print Shop	31.95		

EDUCATIONAL & PERSONAL

Accolade		***Activision***	
Hard Ball	23.95	Alcazar	27.95
Laws of West	23.95	Alter Ego	33.95
Psi 5	23.95	Borrowed Time	27.95
Sundog V 2.0	27.95	Countdown to Shut.	27.95
Access		Designer's Pencil	27.95
Beach-Head I,II (ea)	26.95	Ghostbuster's	27.95

MONTHLY SPECIAL

Checkmate Tech

Multiram II E 64K +80	119.95
Multiram II E 256K +80	154.95
Multiram II E 512K +80	184.95
Multiram II E 768K + 80	229.95
Multiram II E 64K RGB + 80	159.95
Multiram II E 512K RGB + 80	219.95
Multiram II E 1024K RGB + 80	299.95
Multiram II 1792K RGB + 80	479.95
Multiram II EX w/VIP	249.95
Multiram II CX w/256K	159.95
Multiram II CX w/512K	199.95
Multiram II CX16 w/256	309.95
Multiram II CX16 w/512	359.95
Multiram CX 16 Kit w/VIP	209.95

+3.50 S&H

EDUCATIONAL & PERSONAL

Hacker	27.95	Decision Desert	28.95
H.E.R.O.	27.95	F-15 Strike	25.95
Little CPU Disc.	27.95	NATO Commander	25.95
Master Lands	27.95	Silent Service	25.95
Mindshadow	27.95	Solo Flight	25.95
Pitfall	27.95	***Mindscape***	
Road Race	27.95	Bank St. Music	37.95
Rock N Bolt	27.95	Bank St. Story B.	29.95
Space Shuttle	27.95	Crossword Magic	33.95
Star Lge. Baseball	23.95	Deja Vu	39.95
Tracer Sanction	27.95	Forbidden Castle	29.95
Zenii	27.95	Halley Project	31.95
Avant Garde		James Bond View K.	27.95
Dave Winfield	27.95	Keyboard Cadet	28.95
Barrons		Lusher Profile	28.95
Computer SAT	56.95	Perfect Score	46.95
Blue Chip		Racter	32.95
Barron, Millionaire, Squire, Tycoon (ea)	29.95	Rambo Part II	27.95
Broderund		Stephen King Mist	27.95
Captain Goodnight	25.95	Tink's Adventure	22.95
Championship Lode R.	24.95	Tonk in Buddy Bots	22.95
Choplifter	24.95	Tuk Goes Town	22.95
Fantavision	32.95	Tinka's Mazes	22.95
Karateka	24.95	Tinka's Sub. Fair	22.95
Mask of Sun	27.95	Voodoo Island	27.95
Serpent's Star	29.95	***Origin***	
Where in the World	28.95	Autoduel	42.95
CBS		Moebius	42.95
Goren's Bridge	53.95	Ultima 3 & 4 (ea)	39.95
Mastering SAT	61.95	***Penguin***	
Murder by Doz.	27.95	Coveted Mirror	24.95
Datasoft		Crimson Crown	24.95
Alternate Reality	30.95	***Pinpoint***	
Bruce Lee	26.95	Added Menue's (ea)	13.95
Conan	26.95	Micro Cookbook	29.95
Dig Dug	21.95	***Random House***	
Goonies	26.95	Charlie Brown's ABC's	29.95
PacMan	21.95	More Products	CALL
Zoro	26.95	Snoopy Rescue	29.95
Davidson Associates		***Scarborough***	
Alge Blaster	31.95	Boston Diet	50.95
Classmate	31.95	Build a Book	28.95
Math Blaster	31.95	Build Refills 1,2 (ea)	16.95
Speed Reader II	41.95	Mastertype	
Spell It	31.95	Figures & Formulas	21.95
Word Attack	31.95	Filer	28.95
Electronic Arts		New Improved	28.95
All products	CALL	Writing Wizard	53.95
Epyx		Personal Net W.	51.95
Baseball	25.95	Run for the $	28.95
Crush, Crumble	20.95	Songwriter	28.95
Football	28.95	***Sierra On Line***	
Koronis Rift	29.95	Black Caldron	29.95
Pitstop	28.95	King's Quest I,II (ea)	33.95
Summer Games	28.95	***Simon & Schuster***	
Summer Games II	28.95	JK Lasser $ Mng.	50.95
Temple Apshair	28.95	Typing Tutor III	33.95
Winter Games	26.95	***Sir Tech***	
Hayden		Rescue Raiders	27.95
Holy Grail	32.95	Wizardry 1	31.95
Sargon III	32.95	Wizardry 2	25.95
SAT Math	36.95	Wizardry 3,4 (ea)	28.95
SAT Verbal	36.95	***Spectrum***	
Infocom		Gato	27.95
All products	CALL	***Spinnaker/Telarium***	
Learning Company		Alphabet Zoo	21.95
Addition Magician	24.95	Amazon	27.95
Gertrudes Puzzle	29.95	Delta Drawing	27.95
Gertrudes Secrets	29.95	Dragon World	27.95
Juggle's Rainbow	21.95	Fahrenheit 451	27.95
Magic Spells	25.95	Homework Math/Word	29.95
Moptown Hotel	28.95	In Search of	25.95
Moptown Parade	28.95	Kids on Keys	19.95
Number Stumper	27.95	Kindercomp	19.95
Reader Rabbit	27.95	Math Busters	23.95
Robot Odyssey	31.95	Rendezvous w/Rama	27.95
Rocky's Boot	31.95	Shadow Keep	27.95
Word Spinner	25.95	Snooper Trooper1,2 (ea)	24.95
Meca		Story Machine	27.95
Managing Your $	108.95	***Strategic Simulations***	
Micro Lge. Sports		All products	CALL
Baseball	29.95	***Sublogic***	
Microprose		Flight Simulator II	34.95
Crusade in Europe	28.95	***Xerox/Weekly Reader***	
		Sticky Bear Series (ea)	29.95

- ***FREE*** CREDIT CARD USE
- ***FREE*** SHIPPING
- ***FREE*** HANDLING

Customer Service (603) 924-9406

* Our Terms and Conditions
  - Shipping UPS Ground: FREE (Lower 48 only)
  - Handling: FREE
  - Credit Card Surcharge: 0%
  - Purchase Orders: FOB NH, Handling
  - APO/FPO: FOB NH & Handling
  - Prices & Availability Subject to Change

VISA

CALL TODAY—ORDERS ONLY 1-800-845-3003

MasterCard

Incredible SwyftWare!™

It is not possible in an ad to really explain this Apple II (e or c) product which outperforms all other software in speed and simplicity. It does no-frills word processing, information retrieval, telecommunications and many other tasks. Reviewers call it "foolproof and frustration free" and "blindingly fast." It appeals to beginners and experts. Jef Raskin, who invented the Macintosh and who later created SwyftWare, has written up the hows and whys of this product. Please write for a copy. No charge. Or order SwyftWare and see for yourself. At $89.95 and with a 30-day refund policy, there's no risk.

US 800/982-5600
CA 800/562-7400

Information Appliance
1014 Hamilton Ct., Menlo Park, CA 94025

SWITCHBACK

TO ENHANCE or NOT TO ENHANCE your IIe...?

With SWITCHBACK you can have it both ways...without giving up ANY of your favorite software!

$59.95 Please include $2.50 for shipping and handling.

We also offer Enhancement Kits

ADAPT-A-DISC

-the coupler that enables you to use any disk drive compatible with the Apple II+ or IIe as an EXTERNAL disk drive for the IIc.

$19.95 Shipping and handling included in price

COMPUTER ACCENTS, INC
P. O. BOX 5905
KINGWOOD, TEXAS 77325

MasterCard VISA 713-664-9727

CIRCLE 265 ON READER SERVICE CARD

A brief look at the exhibits convinced me that excellent Macintosh products are being designed all over the world.

set. He spent a few minutes creating a "simple" program that included menus, windows, scroll bars, and the like. Once the components were on the screen, his program automatically generated the necessary LISP source code to bring these images to life. Hullot's goal is to create a user-interface construction set that generates source code in any of several programming languages, including LISP, C, and Pascal.

The presentation of some AUC software developed by Neville Smythe (of the Australian National University) was of more direct interest to teachers. He showed a mathematics program called ANUGraph that allowed users to construct mathematical equations using standard math notation. The program then plotted the equations on the screen to any level of precision (see figures 1 and 2). The program could plot several functions at the same time, allowing accurate measurement of intersections of curves. I wish I'd had tools like this when I was in college!

I could go on for many pages about the other AUC presentations. Suffice it to say that the two I've described are typical of the quality of them all.

The conference's third-party expo allowed vendors from many countries to display their wares. A brief look at these exhibits convinced me that excellent Macintosh products are being designed all over the world.

The Last Day

At the end of the last session, David Hartley, Cambridge's director of computing services and master of ceremonies of the conference, came on stage to officially close the proceedings.

"Well," he said, "its over—you can go home now. Go on, let's get back to work!" At that, he put on his academic robe, snapped bicycle clips onto his pants legs, and brought his bicycle onto the stage, complete with a Macintosh sitting in its basket! ✚

David Thornburg is a frequent contributor to this magazine and is the designer of Calliope, a nonlinear idea processor for the Macintosh and Apple II series of computers. You can reach him in care of this magazine.

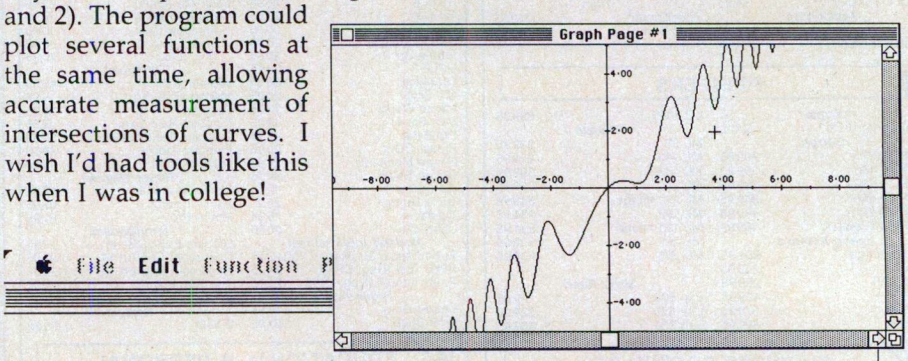


Figure 2: Plot of the function from figure 1. The user can zoom in on any region of the graph to explore its behavior in detail.

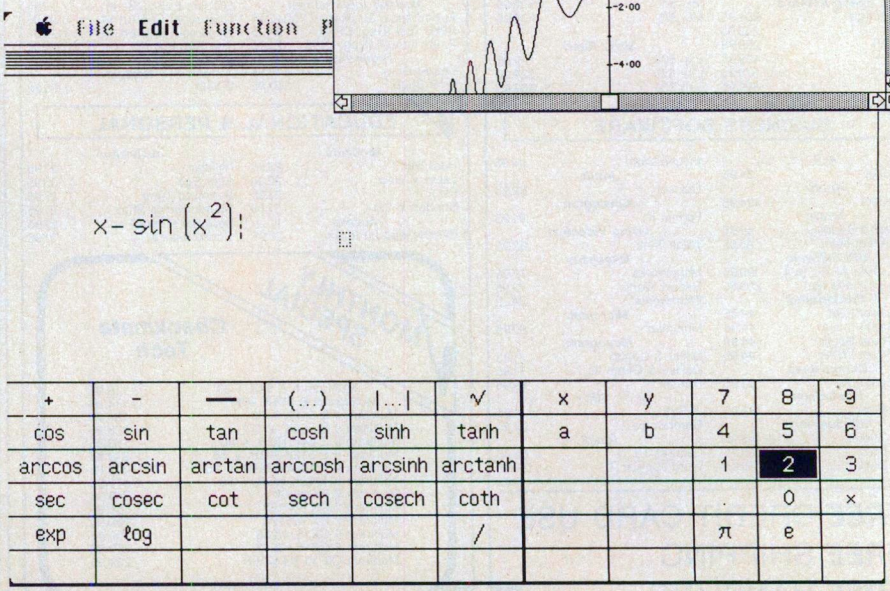


Figure 1: Screen showing the construction of a mathematical expression with the ANUGraph program from Australia. The resultant expression uses standard mathematical notation.

800K for Apple //, Laser 128 for Half Apple's $568 Price

Now you can add 800K of Apple Unidisk 3.5 compatible storage to your Apple // for just about half Apple's price. Our Universal Disk Controller™ allows you to directly connect virtually any drive made for any Apple (even Macintosh) to your Apple // Plus, //e or Laser 128.

Universal Disk Controller

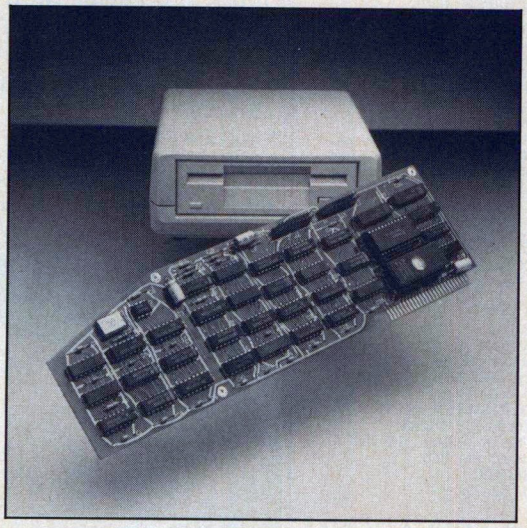
This new controller card combines the functions of 3½ and 5¼ inch drive controllers into one card. Plug in any 5¼ inch disk drive (it supports both old-style 20 pin connectors and //c style DB-19 plugs). Or directly connect an Apple Unidisk 3.5. But most remarkable, the Universal Disk Controller directly accepts Macintosh compatible 800K and 400K external drives.

Unidisk 3.5 compatible

When used with a Mac compatible drive, you still get the identical 800K format used by Apple's Unidisk 3.5—at a considerable price savings. Disks created in Apple's Unidisk 3.5 will work with a Mac drive connected to the Universal Disk Controller and vice-versa. Data Transfer rate is up to par, too. The Universal Disk Controller talks to any drive at full speed.

Mix and Match

You pick what two drives to connect. Plug in two 5¼ inch drives and use it as a standard floppy disk controller. Or connect two Mac drives for a total of 1.6 megabytes of storage. Of course, you can combine drives of different types, too. Connect a 5¼ inch drive and a Mac



Only $285

800K drive, or an Apple Unidisk 3.5 and a Mac drive, or . . .

COPY II PLUS, Free!

Copy II Plus is included free with every Universal Disk Controller. This package of DOS/ProDOS utilities works with 5¼ and 3½ inch drives and was voted the utilities winner of the A+ Readers' Choice Awards.

Everything is Included

No matter what type of Apple compatible drive you have or plan to buy, everything needed to connect it to the Universal Disk Controller is included. Even older Apple // Plus drives plug in directly without adapter cables.

Available NOW!

Call today and order your Universal Disk Controller. Find out just how inexpensive it can be to add an 800K disk to your Apple!

Central Point Software
INCORPORATED
9700 SW Capitol Highway, #100
Portland, OR 97219, (503) 244-5782

☐ Yes, please send me the Universal Disk Controller Card and drives indicated below. And include Copy II Plus—free!

- ☐ **Universal Disk Controller–$150** For Apple //+, //e, and Laser 128.
- ☐ **800K 3.5 inch drive–$195** (Works great with Macintosh, too!)

Or save on these combos:

- ☐ **Universal Disk Controller & 1 drive–$285**
- ☐ **Universal Disk Controller & 2 drives–$475**

And ship them to me at this street address ASAP:

Name _____

Address _____

_____

_____

Daytime phone #(____) _____

To Order By Mail:

Simply send in this order form with a check (add $15 s/h, $30 overseas), or provide your Visa/MC

#_____ _____ _____ _____

and expiration date_____

To Order By Phone:

Just call us at **503/244-5782** 8-5:30 (West Coast time), M-F, with your MasterCard VISA in hand!

Central Point Software
INCORPORATED
9700 SW Capitol Hwy., #100
Portland, OR 97219

Your full line, full service discount computer source.

HARDWARE

CCS
$ 99. 7711 Or 7710-A Serial Card
CENTRAL POINT
79. Wild Card II Copier
C H PRODUCTS (HAYES)
29. Mach II Joystick (II+ Or IIe)
37. Mach III Joystick (II+ Or IIe)
INTERFACE MODULES
39. 64K & 80 Column Card (IIe)
49. Floppy Drive Controller (II+, IIe)
155. Full Ht 143K Floppy Drive (IIe)
155. Half Ht 143K Floppy Drive (IIe)
155. Half Ht 143K Floppy Drive (IIc)
KENSINGTON
69. System Saver Fan
KOALA
75. Touch Tablet
ORANGE MICRO
49. Hot Link Serial To Parallel Cable (IIc)
79. Grappler Plus or Grappler C
135. Buffered Grappler Plus
QUARK
995. 10 MB Hard Disk (IIe, IIc, Or Mac)
SMT
39. Parallel Interface And Cable (II+, IIe)
TG PRODUCTS
19. Joystick (IIe, IIc)
TITAN
155. 128K RAM Card
229. Accelerator IIe
TRACKHOUSE
79. Numeric Keypad (IIe)
VIDEX
179. Videoterm 80 Column Card
189. Ultraterm 132 Column Card
25. Soft Video Switch

DISKETTES

CONROY-LAPOINTE
$ 13. 10 ea. 5¼" SS/SD (Apple)
99. 100 ea. 5¼" SS/DD (Apple)
25. 10 ea. 3½" SS/DD (Mac)
115. 50 ea. 3½" SS/DD (Mac)
29. 10 ea. 3½" DS/DD (Mac)
115. 50 ea. 3½" DS/DD (Mac)
259. 100 ea. 3½" DS/DD (Mac)
MAXELL
13. 10 ea. 5¼" SS/DD (Apple)
32. 10 ea. 3½" DS/DD (Mac)

MONITORS

AMDEK
$119. 300G 12" Green Composite
129. 300A 12" Amber Composite
ZENITH
109. 1220 Amber Composite
109. 1230 Green Composite

6. RCA Monitor Cable

PRINTERS

EPSON
$289. AP 80 75 cps, 15 NLQ
389. FX 85 160 cps, 32 NLQ
STAR MICRO
289. NX 10 120 cps, 25 NLQ
379. SD 10 160 cps, 40 NLQ
PANASONIC
269. P 1091 120 cps
SMT
39. Parallel Card With Cable
CENTRAL POINT
19. Laser 128 Parallel Printer Cable

MODEMS

CONROY-LAPOINTE
$195. 1200 External
389. 2400 External

SURGE SUPPRESSORS

CURTIS
$ 29. Diamond 6 Outlets
35. Emerald 6 Outlets, 6' Cord
46. Sapphire 3 Outlets, RFI Filter
55. Ruby 6 Outlets, RFI Filter, Cord

UTILITY SOFTWARE

BORLAND
$ 42. Turbo Pascal (Requires CP/M)
36. Turbo Toolbox
CENTRAL POINT
23. Copy II Plus
DATA TRANSFORMS
63. Fontrix
FUNK
37. Sideways (DOS 3.3 Or ProDOS)
MICROSTUF
109. Crosstalk (Requires CP/M)
OMEGA
75. Locksmith
TERRAPIN
59. Logo
UNITED
79. ASCII Express (DOS 3.3 Or ProDOS)
VIDEX
35. Appleworks Modifier

BUSINESS SOFTWARE

ASHTON-TATE
305. dBase II (Requires CP/M)
BPI
219. Gen. Accounting, AR, AP, PR (IIe)
235. Gen. Accounting, AR, AP, PR (ProDOS)
DOW JONES
145. Market Manager Plus
199. Market Analyzer
LIVING VIDEOTEXT
89. Think Tank
MEGAHAUS
75. Megaworks Or Reportworks
MICROPRO
265. WordStar Professional
MICROSOFT
62. Multiplan (DOS)
PINPOINT
42. Pinpoint
QUARK
79. Word Juggler & Lexicheck
SSI (SATELLITE)
99. WordPerfect
SOFTWARE PUBLISHING
79. PFS: File, Write, Graph Or Report

GAMES

ELECTRONIC ARTS
$ 29. Sky Fox Or Dr. J & Larry Bird
39. Ultima III Or IV
HAYDEN
30. Sargon III
INFOCOM
29. Hitchiker's Guide Or Zork I, II Or III
MICROPROSE
23. F-15 Strike Eagle
SPECTRUM HOLOBYTE
25. GATO (Requires 128K)
30. Orbiter Or Tellstar I (IIe, IIc)
49. Tellstar II (IIe, IIc)
SUBLOGIC
33. Flight Simulator II

HOME & EDUCATIONAL

BRODERBUND
$ 32. The Print Shop
38. Print Shop With Refill
45. Bank Street Mailer Or Filer
85. Bank Street Combo
MONOGRAM
79. Dollars & $ense (II+, IIe Or IIc)
SIMON & SCHUSTER
33. Typing Tutor III Or Spell Check
SPRINGBOARD
19. Clip Art Vol 1
27. Clip Art Vol 2
35. Newsroom

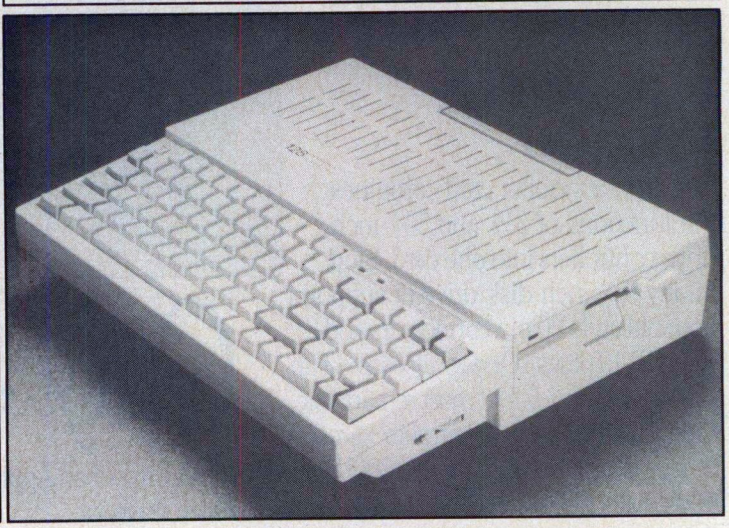
1•800•547•1289

Business Accounts: 1•800•4•CONROY
In Oregon: 1•800•451•5151

Hours: 6-6 Pacific Mon-Fri, 8-4 Sat • Local: (503) 620-9878

ORDERING INFORMATION

- Most orders shipped second day air. Shipping Charges:
- US & Puerto Rico — 3% ($6 minimum)
- APO, FPO — US rate PLUS $5
- Canada — 12% ($15 minimum)
- Foreign — 18% ($25 minimum)
- Heavy items may require additional shipping charges.
- Prices reflect a 3% discount for Conroy-LaPointe Credit Card or cash. Add 3% for other credit card purchases.
- Customer Service: (503) 620-9877
- Prices and availability subject to change without notice.



LASER 128: Better than Apple® at half the price.

- 128K RAM, 32K ROM
- 65C02 CPU
- 5¼" Floppy Drive, Internal
- 1 Expansion Slot, IIe
- 1 Parallel Port
- 2 Serial Ports
- External Drive Port
- Numeric Keypad
- 4 Cursor Keys
- 10 Function Keys
- Supports Double Hi Res
- Mouse/Joystick Port

$499 With Monitor And Cable

$949 Includes Monitor, 2nd Floppy Drive, Printer, Cables

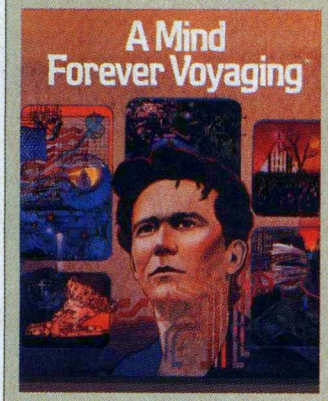
A41

Conroy•LaPointe Inc.

CIRCLE 129 ON READER SERVICE CARD

U.S.A.A.F.
A MIND FOREVER VOYAGING
ADVENTURE CONSTRUCTION SET
MICROSOFT FLIGHT SIMULATOR

That's Entertainment



You are PRISM, the first sentient computer, the successful end product of a long, daring experiment.

TESTING THE PLAN

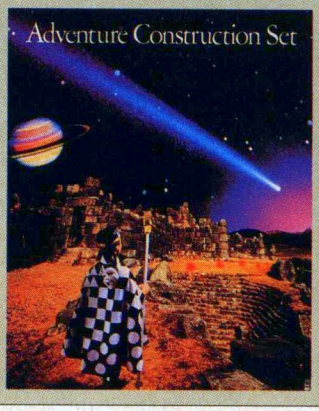
Your name is Perry Simm. You're an ordinary 20-year-old living in the United States of North America. It is the year 2031, and the economy and social order of the country are, if not in chaos, surely heading for it. Now, Senator Ryder has announced the Plan for Renewed National Purpose; as hopeful as it sounds, however, it probably won't be adopted because its validity can't be tested.

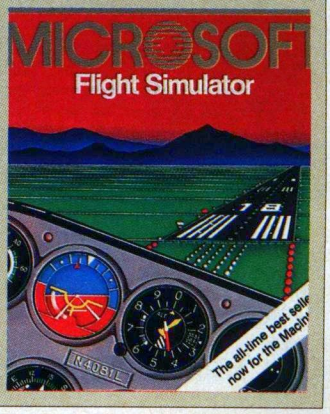
Your country needs you. What can you, an ordinary young man, do to help? As it turns out, you're not Perry Simm, not ordinary, and not 20 years old. On what you perceive to be your 20th birthday, the facts of life are spelled out for you: You're a computer that's been living a simulated life. You are PRISM, the first sentient computer, the successful end product of a long, daring experiment in artificial intelligence. Now, with the ability of a computer and the insight of a human, you can travel into a simulated future to test the ramifications of the Plan.

This is the scenario for one of Infocom's latest text adventures, A Mind Forever Voyaging (AMFV). One program requirement indicates just how intricate the game is: You need 512K to run it. Infocom rates AMFV as an advanced-level game—that's right between intermediate and expert. AMFV is a bewilderingly rich game, with a slightly different flavor than that of Infocom's other offerings. Although you have to figure out a lot, there aren't any tricky puzzles in your path; you won't spend time figuring out how to unlock a Gothic door or finding your way out of a maze of twisty little passages.

As PRISM, you can enter into any of five "modes;" the simulation of the future—or futures (hint, hint)—is only one of them. You have access to facts and figures in the Library mode; the Communications mode activates your numerous audiovisual sensors; the Interface mode puts you in contact with subsidiary computer systems; and the Sleep mode—well, you figure out why a computer might need to sleep.

Your basic mission is spelled out for you: travel into the simulated future,



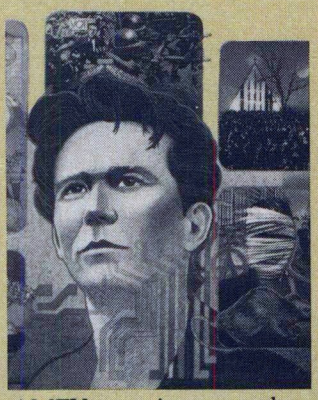


That's Entertainment

observing and interacting, and record important details for the edification of your makers. Of course, you have to figure out what to record and where; you can't overdo it without overtaxing your core memory. It will dawn on you sooner or later that your own analysis of the data is also important, and eventually you'll be able to move further into the future to test your hypotheses. I can't say much more without giving too much away.

Infocom has done its usual superb job with AMFV, and then some. Would you believe a vocabulary of more than 1400 words? The packaging is as imaginative as ever. It includes a Decoder that serves as painless copy protection for the disk; without the decoder, you can't find the proper reply to the security check, which means you can't enter the Simulation mode. It's indicative of AMFV's straightforwardness that the instructions for the Decoder's use are printed right on it; of course, I discovered that only after 20 minutes of trying various replies on-screen. If you've played other Infocom adventures, you don't expect things to be spelled out for you like that!

I have to admit I'm getting a little tired of adventure games in which the role I'm playing is a man; it's a little disconcerting to be talking with my wife in the game and to be interrupted by my husband. That problem aside,



AMFV promises any player hours (and hours and hours) of imaginative fun.
Sharon Zardetto Aker

A Mind Forever Voyaging
Infocom, Inc.
125 Cambridge Park Drive
Cambridge, MA 02140
(617) 492-1031
List Price: $44.95
Requires: Apple IIe or IIc, 128K RAM
CIRCLE READER SERVICE NO. **382**

OUT-OF-BODY EXPERIENCE

Strategic Simulations, Inc., has accomplished the impossible: It has published a World War II computer war game called U.S.A.A.F. (United States Army Air Force) that takes longer than WWII to play. Well, maybe that is a slight exaggeration, but here's what the U.S.A.A.F. box says: "Playing Time: Short Games—3 to 6 hours; Campaign Games—50 to 200 hours."

No *200 hours* is not a misprint, and I dare say that this number is *under*-stated by 50%. But let's not haggle over a few hundred hours here and there. The big question is, what game could captivate anyone for so long a time?

The best AppleWorks-Compatible spelling checker just got better! Introducing the improved... Sensible Speller™

The new ProDOS Sensible Speller supports the Apple II Memory Expansion Card and is now supplied on the UniDisk 3.5, as well as on the 5¼" disk. Its huge vocabulary – 80,000 words in all – is derived from the official Random House Dictionary®.

Used in conjunction with a memory expansion card, the improved Sensible Speller runs up to three times faster than before. You can also load everything – program and dictionaries – on to a hard disk drive.

However, Sensible Speller is still just as easy to use. It shows you misspellings in context, suggests the correct spelling, and allows immediate replacement of misspelled words with correct ones.

Chances are you are already equipped to use Sensible Speller because it works with AppleWorks and virtually all other Apple word processors.* It runs on all Apple //c, //e and II+ computers and is available at your dealer for $125.

Black's Law Dictionary,™ Sensible Technical Dictionary™ and **Stedman's Medical Dictionary™** are available separately on diskette for use with the Sensible Speller. Each is $39.95. A new utility now allows you to merge the dictionaries together.

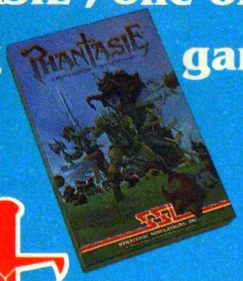
COMPATIBLE WITH:
- **Memory Expansion Cards**
- **UniDisk 3.5 & 5¼" Drives**
- **Hard Disk Drives**
- **AppleWorks and Most ProDOS Word Processors**
- **Catalyst**

*Sensible Speller ProDOS works with the following word processors: AppleWorks, AppleWriter-ProDOS version (Apple Computer, Inc.); Format II Enhanced-ProDOS (Kensington Microware); Mouse Write-text files (Roger Wagner Publishing); MouseWord (International Solutions); PFS:WRITE-ProDOS (Software Publishing, Inc.); Word-Talk (Computer Aids) and WordPerfect (SSI Software); Word Juggler (Quark Inc.); Writing Wizard (Scarborough Systems); Zardax-ProDOS (Computer Solutions); and others. Owners of trademarks indicated in parentheses. Black's Law Dictionary (West Publishing, Inc.); Stedman's Medical Dictionary (Waverly Press, Inc.)

Sensible Software,® Inc. 210 S. Woodward, Suite 229, Birmingham, MI 48011 (313) 258-5566

CIRCLE 106 ON READER SERVICE CARD

First, there was PHANTASIE™, one of the most popular fantasy role-playing games ever made.



Now, a new adventure begins...

PHANTASIE II™

For no reason other than for perverse pleasure, the Dark Lord Nickademus fashioned an evil orb, through which he cast a curse on a beautiful island and its people.

Now, six intrepid adventurers under your guidance brave the cruel warlock's wrath to find and destroy his nefarious handiwork.

If you've played the original PHANTASIE, you may transfer those same characters to this sequel. If you haven't, don't worry. You can always start with new characters that range from mere humans to exotic, unearthly creatures.

This exciting adventure can start right away by a quick visit to your local computer/software or game store today!

If there are no convenient stores near you, VISA & M/C holders can order this $39.95 game by calling **toll-free 800-443-0100, x335.** To order by mail, send your check to: **STRATEGIC SIMULATIONS, INC.**, 1046 N. Rengstorff Ave., Mountain View, CA 94043. (California residents, add 7% sales tax.) Please specify computer format and add $2.00 for shipping and handling. All our games carry a "14-day satisfaction or your money back" guarantee.

WRITE FOR A FREE COLOR CATALOG OF ALL OUR GAMES TODAY.

ON DISK FOR 48K APPLE® II SERIES & C-64™.

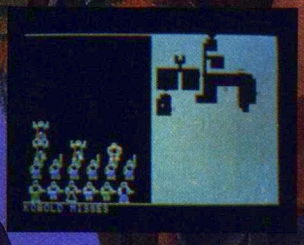
PHANTASIE and PHANTASIE II coming soon on the ATARI® ST!

SSI

©Copyright 1986 by **STRATEGIC SIMULATIONS, INC.** All rights reserved.

A small section of the wilderness your band must explore.

A sample of recruits from the Adventurers' Guild.



You must map out dungeons and fend off hideous monsters.

Your group has found Pluto's Palace in the Netherworld.

APPLE, C-64 and ATARI ST are trademarks of Apple Computer, Inc., Commodore Electronics, Ltd., and Atari, Inc., respectively.

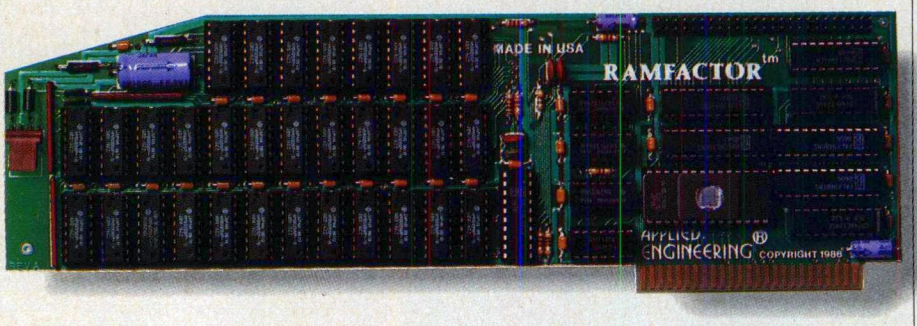
CIRCLE 131 ON READER SERVICE CARD

RamFactor™

All the Performance, Speed, and Software Compatibility of RamWorks™ in a Slot 1 through 7 Card.

That's right! Now Applied Engineering offers you a choice. While RamWorks is the clear winner for the auxiliary slot in a IIe, RamFactor is the standard for slots 1 through 7. Now anyone with an Apple II+, Franklin, or Apple IIe preferring to use slots 1 through 7 can now enjoy the speed and performance that until now was only available with RamWorks.

With RamFactor, you'll be able to instantly add another 256K, 512K, or a full 1 meg on the main board and up to 16 meg with additional piggyback card. And since virtually all software is automatically compatible with RamFactor, you'll immediately be able to load programs into RamFactor for instantaneous access to information. You'll also be able to store more data for larger word processing documents, bigger data bases, and expanded spreadsheets.



Very Compatible

All the leading software is already compatible with RamFactor. Programs like AppleWorks, Pinpoint, BPI, Managing Your Money, Dollars and Sense, SuperCalc 3A, PFS, MouseWrite, MouseDesk, MouseCalc, Sensible Speller, Applewriter IIe, Business Works, ReportWorks, Catalyst 3.0 and more. And RamFactor is fully ProDos, DOS 3.3, Pascal 1.3 and CP/M compatible. In fact, no other memory card (RamWorks excepted) is more compatible with commercial software.

AppleWorks Power

There are other slot 1-7 cards that give AppleWorks a larger desktop, but that's the end of their story. But RamFactor is the only slot 1-7 card that increases AppleWorks internal memory limits, increasing the maximum number of records in the database and lines permitted in the word processor, and RamFactor is the only standard slot card that will automatically load AppleWorks into RAM dramatically increasing speed and eliminating the time required to access the program disk, it will even display the time and date on the AppleWorks screen with any ProDos clock. RamFactor will automatically segment large files so they can be saved on 5¼", 3½", and hard disks. All this performance is available to anyone with an Apple IIe *or* II+ with an 80 column card. RamFactor, no other standard slot card comes close to enhancing AppleWorks so much.

True 65C816 16 Bit Power

RamFactor has a built-in 65C816 CPU port for direct connection to our IIe 65C816 card for linearly addressing up to 16 meg for the most powerful 16 bit applications. (II+ 65C816 card under development.)

Powerful Program Switcher

With RamFactor, you can organize memory into multiple work areas and switch between them. Each work area can contain different programs and even different operating systems. Now you can switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/M to Pascal to ProDos in under a second. And with our Battery back-up option, you can have permanent storage for up to 20 years.

Quality and Support of the Industry Leader

RamFactor is from Applied Engineering, the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

Features:

- Up to 16 meg total memory, 256K to 1 meg on main board. Up to 16 meg with additional memory on piggyback card.
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe, II+ and Franklin
- Battery back-up option allows you to turn on your Apple and run your favorite programs in less than 1 second!
- Automatically recognized by ProDos, DOS 3.3, Pascal and CP/M
- Built-in RamDrive™ software (a true RAM disk not disk caching)
- Systems are directly bootable from RamFactor if desired
- Built-in linear addressing 16 bit co-processor port
- Built-in self diagnostic software
- Automatic expansion with AppleWorks 1.3 or later
- Allows Apple II+ and IIe to run your AppleWorks without buying additional software
- Accelerates AppleWorks
- Displays time and date on the AppleWorks screen with any ProDos clock
- Fits any I/O slot except slot 3
- Fully socketed and user upgradeable
- Much, much more

RamFactor with 256K	**$239**
RamFactor with 512K	**$289**
RamFactor with 1 MEG	**$389**
RamFactor with 2-16 MEG	**CALL**
Battery Back-up Option	**$179**
65C816 16 Bit Card	**$159**

Order RamFactor today . . . with 15 day money back guarantee and our "no hassle" five year warranty. *Call* 9 a.m. to 11 p.m., 7 days, *or send* check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5⅛% sales tax. Add $10.00 if outside U.S.A.

Applied Engineering™

The Apple enhancement experts.

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

That's Entertainment

U.S.A.A.F. covers the "daylight bombing of Nazi Europe." In a two-player game, one player commands U.S. bombers and fighters, and the other commands the German air force (*Luftwaffe*, for you history buffs). In a one-person game, the computer controls either side. Five difficulty levels are available, and you will be happy to know that you can save a game in progress.

The game uses daily turns broken down into ten-minute segments for movement and combat. For the U.S. player, this scheme means evaluating the damage from previous raids, replacing lost aircraft and crews, assembling a bomber force, picking a target city, coordinating bomber missions to different cities, picking a mission type (from strafing airfields to bombing U-Boat pens), and coordinating fighter escorts.

The Luftwaffe player evaluates damage, redirects production, replaces aircraft, allocates flak units, launches patrols, intercepts U.S. bombers and fighters, and keeps track of ever-dwindling fuel supplies. Each side does all these things on a group level of about 50 planes per group.

Give U.S.A.A.F. designer and programmer Gary Grigsby credit—the program flows well. A menu-driven approach makes entering numbers, picking targets, reviewing results, and all the other things you need to do fairly painless. The aircraft-replacement step could be streamlined, and the whole procedure takes a

long time, but the process runs smoothly.

U.S.A.A.F. requires a lot of mental gymnastics, especially when you figure in experience points and morale levels. It is not so much a game as a mathematical exercise. The rule book contains more than a dozen formulas concerning such diverse effects as bomb damage, flak disruption, and air-to-air kill ratios.

Frankly, U.S.A.A.F. overwhelms me more than it captivates me. The meticulous detail and figure juggling may excite the dedicated wargamer, but it leaves me feeling like I am having a near-death/out-of-body experience—the detached impulse to be somewhere else while my body lies dormant at the computer.

If immersing yourself in number crunching while coordinating missions and bombing German factories is your kind of entertainment, however, then U.S.A.A.F. deserves a place in your disk drive.

Russ Lockwood

U.S.A.A.F.
Strategic Simulations, Inc.
883 Stierlin Road
Bldg. A-200
Mountain View, CA 94043
(415) 964-1355
List Price: $59.95
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive

CIRCLE READER SERVICE NO. **383**

Disk Drive Card - Dual Drive . . $35
Z80A+ Card - CP/M $39
80 Column Card w/64K Mem. . . $49
Graphics Printer Card $49

Serial+ Card $59
16K Language Card $39
EPROM Programmer $59

80 Column, Color RGB w/Memory CALL!

— 90 DAY WARRANTY —

J & J International

(602) 265-9191

444 W. Camelback Road, Suite 304
Phoenix, Arizona 85013

M/C VISA - ADD 5% — ALL PRICES PLUS SHIPPING & HANDLING
AZ RESIDENTS ADD 6.5% SALES TAX

CIRCLE 180 ON READER SERVICE CARD

Update your *IIe* for under $100

Includes: cover plate, new keyboard enclosure, cable, mounting hardware and complete easy-to-follow instructions.

Name _____
Address _____
City _____ State _____ Zip _____
Send check or money order for $99 (we pay shipping charges) or:
Credit card purchase — $104 includes shipping.
☐ Visa ☐ MasterCard
Acct. # _____
Signature _____ Exp. Date _____
California Residents add 6% sales tax.

INNOVATIVE MICRO, INC.
Systems Wholesaler (714) 661-0435
34732 Calle Fortuna, Capistrano Beach, CA 92624

CIRCLE 153 ON READER SERVICE CARD

That's Entertainment

PLAYING GOD

If you're an inveterate fantasy/role-playing adventure player like me, you probably get frustrated with certain games. I'm sure you frequently get tired of hitting your head against the wall trying to figure out the obscure solutions to some of their less-than-logical puzzles. Because of this, how many times have you exclaimed, "I can do it better!"? Well, if you were serious about your avowal, now you have your chance to try.

Stuart Smith's Adventure Construction Set (published by Electronic Arts) is an intricate program that allows you to construct your own fantasy/role-playing adventures. You can play God to

your heart's content, creating worlds and civilizations with their own customs, artifacts, and languages. If your work doesn't please you, you can destroy it all with scarcely more effort than snapping your fingers.

Included in the two-disk ACS package are a tutorial, complete with seven mini-adventures (to give you an idea of some of the different types of games you can create) and a complete, complex adventure, Rivers of Light.

Lest you think you can come up with another Ultima, Wizardry, or Bard's Tale with ACS, guess again. The game you make will be in the same style as Rivers of Light, which is similar to Smith's earlier efforts Ali Baba and the Forty Thieves and Return of Heracles.

My feelings about ACS are mixed. If I were really wild about it, I could emphasize the ease of operation, going on at length about the menu-driven options. I could also do a great sell-job writing about the many choices you have in constructing your game and the wide range of possibilities open to you; thanks to the ingenious Mr. Smith, you can control virtually every element of your game, from the maps to the music. And for those of you who don't care about deciding on every detail, I would certainly wax poetic about the way ACS can custom-build an adventure to your specifications with only minimal input from you.

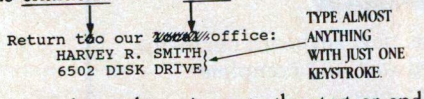
ACS lets you construct your own fantasy adventures.

If, on the other hand, I

MacroWorks™ makes AppleWorks™ work the way it should have in the first place.

New Word Processing Power

MacroWorks streamlines AppleWorks word processing with a multitude of new features. For example, one quick keystroke now deletes the character or the word at the cursor.



Use one keystroke to jump to the start or end of a text line. Another keystroke will erase an entire line. Change your mind? Apple-U will instantly "Undo" your last delete command!

AppleWorks Macros

MacroWorks will convert any series of keystrokes into a new one-keystroke solid-Apple command (original open-Apple commands stay intact). Use our built-in macros, or define your own. For example, make Apple-N type your name and address. Or let Apple-X save or print *all* of your Desktop files, nonstop.

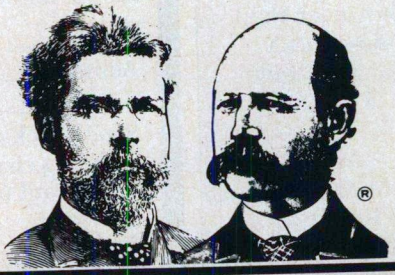
For the Word Processor, Data Base and Spreadsheet

Be creative! Set up macros to execute *any* often-repeated function. You can even skip unwanted questions like "How many copies?".

Flexible and Compatible

Use MacroWorks on a floppy disk, hard disk, Unidisk 3.5™or RAM disk. It is compatible with the Checkmate™and Applied Engineering (RamWorks™or Z-Ram™) Desktop Expanders.

MacroWorks is NOT a time-consuming "pre-boot" disk. You boot AppleWorks like you always do, but now you've got new features.



Beagle Bros MICRO SOFTWARE

3990 Old Town Avenue, San Diego, California 92110

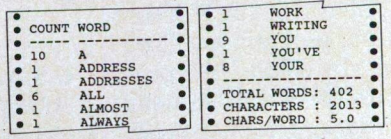
AVAILABLE AT MOST SOFTWARE STORES or by mail: Visa, MasterCard or COD orders, phone toll free 1-800-227-3800 ext. 1607

Multi-Column Printouts!

MacroWorks' Galley program prints your AppleWorks Word Processing files in side-by-side columns (two or three-wide) for faster and easier newsletter layouts.

Analyze Your Files

MacroWorks' File Analyzer program prints a sorted list of every word it finds, and reports the number of occurrences of each word and the average word-length. Great for making an index or for analyzing your writing style.



COUNT	WORD
10	A
1	ADDRESS
1	ADDRESSES
6	ALL
1	ALMOST
1	ALWAYS
1	WORK
1	WRITING
9	YOU
1	YOU'VE
8	YOUR

TOTAL WORDS: 402
CHARACTERS : 2013
CHARS/WORD : 5.0

Alphabetize Your Catalogs

MacroWorks' Alpha-Cat program prints a sorted two-column list of all the file names on a disk. Perfect for disk I.D. labels!

$34.95 Friendly and Unprotected

MacroWorks works with all versions of AppleWorks on any Apple IIc or 128K IIe. And you can make disk backups without hassle.

(AppleWorks is a trademark of Apple Computer, Inc.)

AD #MW2

CIRCLE 148 ON READER SERVICE CARD

You can control virtually every element of your game.

were really negative about ACS in general, I could dwell on the speed of the game play (which you cannot control), as I found it to be rather slow and cumbersome compared with, say, Ultima IV, which really zips along. I would also mention strongly that the adventures you complete can only be played by other ACS owners, severely limiting the future life of your creation. After all, you won't want to play your own adventure, will you? You know all the secrets and all the answers to your own puzzles!

But, putting all the pros and cons aside, I must question how many of you will actually take the time to put together your own adventure from scratch. No matter how easy ACS is to use, the forethought that goes into any adventure, let alone a good one, is difficult and time-consuming. Because ACS is not designed for computer programmers but is for users such as you or me, it is competing for essentially the same entertainment dollar in the marketplace of Ultima IV, Wizardry, and Bard's Tale. Those games are already finished, in perfect shape, and just awaiting your exploration.

So if you are one of those intrepid souls I described in the beginning of this review, before you are tempted to buy ACS, sit down at your desk and start plotting your original adventure on plain paper. Before you are too far into it, I guarantee you will suddenly have an enormous respect for the makers of all those games that used to frustrate you.

Donald Oliver

Adventure Construction Set
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
List Price: $49.95
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive
CIRCLE READER SERVICE NO. **384**

THE MAC TAKES OFF

After a long spreadsheet session, nothing is quite so satisfying as taking to the air on computer wings. Witness the fact that the two most popular early programs for the IBM PC were Lotus 1-2-3 and Microsoft Flight Simulator.

Now, Macintosh owners, you too can leave the mundane figures of your favorite number cruncher to enter the cockpit of a Cessna Turbo Skylane RG II. From there you can explore many of the airports and cities of the United States. A single-engine prop plane's not to your liking? Then try the Gates Learjet 25G for the ultimate in executive travel. Of course, if you are feel-

BACK 4 UP YOUR DISKS

EDD Version 4 is the most powerful copy program available for backing up "uncopyable" or "copy-protected" disks. ■ In addition to backing up disks, **EDD 4** also features a hi-resolution graphic DISK SCAN option to help you locate information on a disk, a CERTIFY DISK option for certifying blank disks, and since it's very important that your disk drives are running properly (especially when copying disks), we have also included an EXAMINE DISK DRIVE option. ■ Even though **EDD 4** has been preset to copy the broadest range of copy-protections possible, **EDD 4** can be "modified" to back up almost any disk that runs on your Apple! ■ For the dedicated user, in addition to **EDD 4,** we are offering an **EDD 4 PLUS** version that includes a specially designed hardware card which allows **EDD** to copy EVERY bit of information from each track accurately! You can bet that if **EDD 4 PLUS** can't copy it, nothing will! ■ **EDD 4** runs on an Apple II, II Plus (including most compatibles, IIe, IIc, and III (using emulation mode), and is priced at **$79.95.** ■ **EDD 4 PLUS** runs on Apple II, II Plus (including most compatibles), and IIe, and is priced at **$129.95** (duodisk/unidisk 5.25 owners must add $15 for a special cable adapter). Ask for **EDD** at your local dealer, or to order direct, include $3 ($6 foreign) shipping/handling for **EDD 4,** or include $5 ($8 foreign) for **EDD 4 PLUS.** ■ Mastercard and Visa accepted. All orders must be prepaid. ■ If you have an earlier version of **EDD,** you can update to **EDD 4** or **EDD 4 PLUS** at a reduced price. Send your **EDD** disk to us, and deduct $50 from your order.

EDD is sold for the sole purpose of making archival copies *ONLY!*

UTILICO MICROWARE
3377 SOLANO AVENUE / SUITE 352 / NAPA, CA 94558 / 707-257-2420

ESSENTIAL DATA DUPLICATOR 4

CIRCLE 190 ON READER SERVICE CARD

That's Entertainment

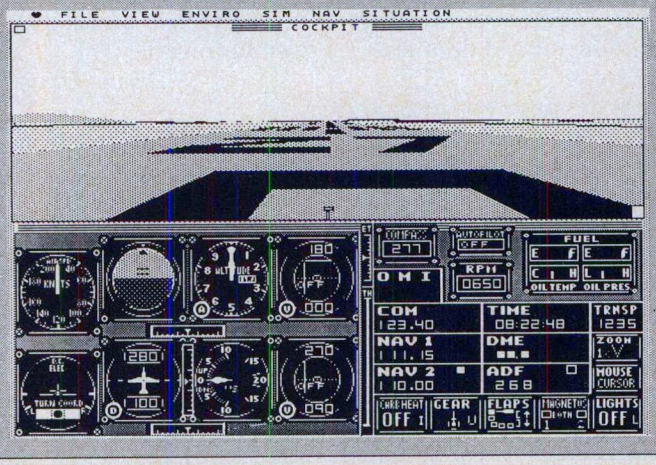
Microsoft Flight Simulator for the Mac is loaded with extras.

ing especially adventurous, you can take on World War I Aces in a bombing raid cum dogfight (not available on the 128K Mac).

The Joy of Options

You, the pilot, have a tremendous number of options. You can control such diverse conditions as time of day, season of the year, cloud layers, wind and turbulence, and mechanical reliability of the plane. You can fly in the auto-coordinated mode (rudder and ailerons work together), or you can operate the ailerons with the mouse and the rudder with the < and > keys.

Basic operation of the planes is easy to grasp. You move the mouse forward and back to control the elevators, forcing the nose of the plane down or up. Sideways motion of the mouse controls the ailerons, which cause the plane to bank. Dragging the mouse up or down controls the throttle and therefore the speed of the plane as well as its lift. Depending on the amount of realism you desire, applying the throttle too fast can flood the engines and cause them to fail.



The control panel is exceptionally clear and detailed. You have all the standard controls plus a full set of navigational equipment including two NAV radios, Distance Measuring Equipment (DME), Automatic Direction Finder (ADF), COM radio, and more. You can receive approach instructions and other data from airport towers and even land entirely by instruments using Instrument Landing Systems (ILS). Other controls include carburetor heat, magnetos, lights, flaps, and landing gear.

For those who don't wish to master all the flying arts or for pilots em-

1200 BAUD MODEMS

Coit Valley Computers has two modems for your every need. Both are top quality state-of-the-art 1200/300/110 baud **Hayes™ compatible** modems; which means your computer can send & receive data at lightning fast speeds! And automatically switch between 1200 and 300 baud to communicate with slower Apples. Since neither comes with software, we carry Ascil Express ProDOS at a low price of $89.

AVATEX™ 1200 EXTERNAL STAND-ALONE MODEM **$169.**

- 100% plug in Modem for **Apple IIc or Macintosh** with proper cable (see below). **Hayes compatible.**
- Universal modem that only requires modem compatible serial card (or port), & cable, to plug into **Apple IIe, Apple II+, or IBM**
- Auto Answer, Auto Dial, Auto Redial, Auto Disconnect
- Full Bell 212A compatibility
- Automatically switches between 300 baud & 1200 baud incoming speeds
- Complete diagnostics & full complement of LEDS (TR, SD, RD, HS, MC, TM, RI)
- DATA/VOICE Button switches from talk to data transmission & back again
- FREE Compuserve offer & free access time. One year warranty.

CERMETEK APPLE-MATE™ 1200 INTERNAL MODEM **$209.**

- Internal 1200 baud modem for **Apple IIe or Apple II+**
- Only one card & takes only one slot w/ no external interface or power supply. **Hayes compatible.**
- Built-in Super Serial Card equivalent
- 1200/300/110 baud operation and Bell 212A compatibility
- Built-in Speaker & Diagnostics
- Auto Dial, Auto Answer, & Auto Select. Two year warranty.

2400 BAUD MODEMS — Call

CABLES REQUIRED WITH AVATEX MODEMS

Apple IIc - Avatex Cable	$ 22.
Apple IIe, II+ - Avatex Cable	25.
Macintosh - Avatex Cable	27.
IBM - Avatex Cable	23.

OTHER APPLE PERIPHERALS

IIe/II+ Serial Modem Card	$ 99.
RGB Monitor for Apple IIe (+ $24 cable)	324.
Ascii Express ProDOS	89.
MultiRam RGB cards (facing page)	➡ ➡

With prices this low, how can you afford to be without a 1200 baud modem? Just the savings in connect time, will pay for the difference between a 300 & 1200 baud modem. You can get everything you need from Coit Valley Computers. Shipping on modems $5-Ground/$8-Air; monitors $10. See terms on facing page.

Hayes, Avatex, Apple-Mate respective registered trademarks of Hayes Microcomputer Products, E+E DataComm, Cermetek Micro.

COIT VALLEY COMPUTERS • 14055 Waterfall Way, Dallas, TX 75240 • **(214) 234-5047**

CIRCLE 104 ON READER SERVICE CARD

7 Meg IIe/640k IIc

Don't buy yesterday's card that doesn't offer battery backed-up **STATIC** RAM or 65C816 new Apple technology just because it's advertised a lot! You can buy Checkmate Technology's **State-Of-The-Art MULTIRAM RGB RAM CARD™** with **BATTERY BACKED-UP STATIC RAM** options that can load & save programs (like AppleWorks) for 10 years! It is a **FASTER & LESS EXPENSIVE REPLACEMENT FOR HARD DISKS,** is **USER EXPANDABLE TO 6 MEGABYTES,** compatable with all (100%) 3rd party software/hardware, has an optional real 16-Bit 65C816 slot saver Co-Processor card, sharp 80 columns, super Double Hi-Res, & BUILT IN RGB*! It's a direct substitute for Ramworks II™ or Apple Ext 80 column cards & has an amazing 5 year warranty! Unlike Ramworks II, MultiRam fits ALL (even Euro) Apple IIe's, can't interfere with slot 1 cards & has no soldered chips!

MultiRam RGB expands to 1 Meg main RAM + 4 Meg's piggyback RAM + 2 Meg's BATTERY BACKED-UP RAM. **MultiRam IIe** expands to 768k & can piggyback w/ MultiRam RGB. **A POSSIBLE 7 MEGABYTES IN ONE SLOT - MORE THAN RAMWORKS II & Flipster™.**

FREE APPLEWORKS EXPANDER SOFTWARE that loads ALL (even printer routines or PARTS of AppleWorks, runs 30 x faster, increased Desktop over 2048k, auto-segments large files onto multiple disks, stores over 23,000 records & 5000 lines! **FREE** APPLEWORKS TIME/DAY/DATE ON-SCREEN, AUTO-COPY TO RAM, ULTRA-FAST PRODOS/DOS 3.3 RAM DISK & RAM TEST, optional CP/M & Pascal Ram disk! Printer Buffer due anytime.

	MultiRam RGB Card	MultiRam IIe Card
64k **MULTIRAM**	169.	129.
128k **MULTIRAM**	179.	139.
320k **MULTIRAM**	206.	175.
576k **MULTIRAM**	241.	214.
832k **MULTIRAM**	266.	239.
1024k MULTIRAM	284. ← ← ← ← ←	
1344k **MULTIRAM**	449.	-
1600k **MULTIRAM**	484.	-
1792k **MULTIRAM**	519.	-

256k Memory Chips-1 yr warranty (8)	55.
Apple IIe Enhancement Kit	62.
Accelerator IIe-350% speedup card (IIe/II+)	222.
CP/M & Pascal Ram Disk IIe/IIc (ea.)	20.
Clockworks Card (Thunder/Time HO™ comp)	89.
Pico™ Slimline Drive IIc, IIe, II+	158.
FD-100 Slimline Drive IIe, II+	115.
Pinpoint Program or Spell Checker (ea)	49.
65C816 EX Co-Processor Card	157.
RGB Monitors, Connectors & Cables*	call

Terms: Add $4-Ground or $6-Air shipping & phone # to each U.S. card order (foreign orders/FPO/APO extra). Add 3% for MasterCard/Visa (include #/expir) & P.O.'s (3% 7 Net 30). For fast delivery send Cashier's/Certified check, Money Order. C.O.D. (add $5) & personal checks accepted (allow 16 days). **Tex res add 6 1/8% tax.**

MultiRam, Ramworks/Ramworks II/Timemaster II H.O./Z-ram, Pico, Flipster, respective trademarks of Checkmate Technology, Applied Engineering, WGE, Cirtech.

Checkmate Technology's **State-Of-The-Art MULTIRAM CX** card easily expands your IIc up to 640k, is 100% compatable with all IIc software/hardware, & comes with the **SAME FREE SOFTWARE as MULTIRAM IIe (see above). MULTIRAM CX** can be upgraded with a **real 65C816 kit (unlike Z-Ram™)** to likely run software for the new Apple computer!

- **UNLIKE Z-RAM, THERE ARE NO JUMPER WIRES, CLIPS TO ATTACH, SOLDERED CHIPS, OR DRIVE REMOVAL REQUIRED FOR INSTALLATION.**
- **USES ABOUT 50% LESS POWER** than Z-RAM causing less power supply strain or battery pack drain!
- **15 DAY MONEY BACK SATISFACTION GUARANTEE,** 5 YR WARRANTY, & LOWER PRICES - We sell IIc cards for much less & our software updates are FREE & AUTOMATIC, while others charge $10 or more!

OUR LOWEST PRICE

256k MULTIRAM CX	**189.**
512k MULTIRAM CX	**237.**
65C816 CX Kit ($10 less w/ card)	129.
VIP Professional w/ any 65C816	117.
1200 Baud IIc Modem w/cable	**189.**
IIc System Clock	66.

WHY BUY FROM COIT VALLEY COMPUTERS RATHER THAN SOME MAIL ORDER HOUSES? Only we offer an exclusive 15 day money back satisfaction guarantee, double software, more support, free **automatic** software updates, free 64k with each 256k/512k/768k IIe card. We know the products well, & we have them in stock. **CALL FOR DETAILS, CURRENT PRICES, QUANTITY DISCOUNTS, OR NEW FEATURES! SCHOOLS & GROUPS WELCOME.**

ORDER FORM

COIT VALLEY COMPUTERS (214) 234-5047
14055 Waterfall Way Dallas, Texas 75240

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE ( ) _____

SIGNATURE A8

QTY	DESCRIPTION	PRICE
	SHIPPING	
	TOTAL	

MC/VISA _____ EXP _____

COIT VALLEY COMPUTERS
(214) 234-5047
14055 Waterfall Way
Dallas, Texas 75240

CIRCLE 105 ON READER SERVICE CARD

That's Entertainment

The control panel is exceptionally clear and detailed.

barking on long flights, a sophisticated autopilot is available. You can set the autopilot to control wing levelers, constant altitude, and heading or set it to track a VOR signal. Each of these choices is available separately or together with others. On long flights (a transcontinental jet flight, for instance), you may want to set the autopilot, take a snooze, and come back later. Flying time corresponds to real time.

The game offers two ways to get past the real-time barrier when you're moving from one place to another. One is to set the actual coordinates of your desired destination by using the Position Set command. The excellent and detailed manual includes a listing of coordinates for major U.S. airports. The other way to cover a lot of ground quickly is to use what is called slewing. Slewing allows you to fly much faster than a plane could normally fly, viewing the scenery as you go. The coordinates of your current position appear at the top of the screen at all times.

Windows Everywhere

Microsoft Flight Simulator is loaded with extras. The Cessna sounds like propellers; the Learjet sounds realistically like a powerful jet.

The simulator offers you several interesting ways of enjoying your flights. For instance, the Map window displays an aerial map of your present location.

The ground tracking and spotter plane let you observe your plane as you fly.

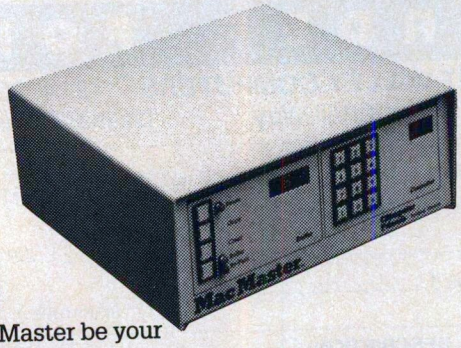
In addition to the Map window, you can open a second view window. In either or both view windows, you can display the view from the cockpit, from the ground (tower or tracking view), or from a spotter plane. You use the keyboard to select one of nine directions for the cockpit view.

The ground tracking and spotter plane are unique, in that they allow you to observe your plane as you fly. By putting one of these views in the second window and the normal cockpit view in the first, you might be able to perform complex aerobatics and watch your performance as you do. If you execute a particularly fine maneuver, you can turn on an instant replay at any time. You can set any window to any size or position on the screen and remove it quickly with a couple of

Computer Friends Buffers, the new generation.

MAC MASTER™
Universal Buffer & Printer Controller.

All fonts/forms of any printer at your fingertip.



LOOK!

Let Mac Master be your

1. Buffer and free your Computer Memory.
2. Printer Controller. Mac Master stores/recalls all the fonts, commands of any printer you connect to it.
3. Auxiliary Memory. Mac Master stores/recalls files, logos, graphic symbols, etc.

Plus multiple copy capability, memory and copy no. display, pause and bypass option, and more. Available in **parallel** or **serial.**

64K **$299.00** — 256K **$450.00**

1 MEG **$750.00**

Shipping $4.00 U.S.

PROTEUS™
Double Buffer & Data Switch (Parallel).

Connect 2 printers or other parallel peripherals to PROTEUS and you will have: **1.** Buffer on Port 1 and 2. **2.** Switching capability (manual or via software). **3.** Multiple Copy capability on both ports.

PROTEUS 64K – $199.00

PROTEUS 256K – $299.00

Shipping $4.00 U.S.

Mac Master and/or Proteus are easily installed and can be used immediately. 12 Months Warranty.

Order Toll Free. Call or write for free brochure.

1-800-547-3303

In Oregon 503-297-2321 (24 hours line)

Computer Friends®

6415 SW Canyon Ct., #10, Portland OR 97221, telex 4949559

Dealer inquiries welcome.

CIRCLE 195 ON READER SERVICE CARD

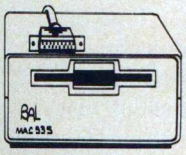
DOUBLE SIDED MAC DRIVE $249.95

COLOR MONITOR

- TOP RATED FOR APPLE
- 13" COMPOSITE VIDEO
- RESOLUTION: 280H x 300V
- INTERNAL AUDIO AMP
- ONE YEAR WARRANTY

SAKATA SC-100 $169.95

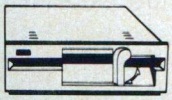
DISK DRIVES



DOUBLE SIDED

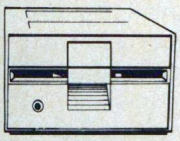
MAC 535 $249.95

- 3.5" ADD-ON DISK DRIVE
- 100% MACINTOSH COMPATIBLE
- DOUBLE SIDED, 800K BYTES STORAGE
- HIGH RELIABILITY DRIVE HAS AUTO-EJECT
- FULL 1 YEAR WARRANTY



BAL-500 $129.95

- TEAC MECHANISM-DIRECT DRIVE
- 100% APPLE COMPATIBLE
- FULL 1 YEAR WARRANTY



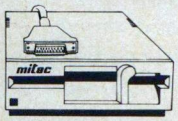
AP-135 $129.95

- FULL HT. SHUGART MECHANISM
- DIRECT REPLACEMENT FOR APPLE DISK II
- SIX MONTH WARRANTY

AP-150 $99.95

- ½ HEIGHT, DIRECT DRIVE
- 100% APPLE COMPATIBLE
- SIX MONTH WARRANTY

FOR APPLE IIc



MITAC AD-3C $139.95

- 100% APPLE IIc COMPATIBLE, READY TO PLUG IN W/ SHIELDED CABLE & MOLDED 19 PIN CONNECTOR
- FAST, RELIABLE SLIMLINE DIRECT DRIVE
- SIX MONTH WARRANTY

DISK DRIVE ACCESSORIES

DISK CONTROLLER CARD	$49.95
APPLE IIc ADAPTOR CABLE	$19.95

ADAPTS STANDARD APPLE DRIVES FOR USE WITH APPLE IIc

PRINTER SWITCH BOXES

2 WAY SWITCH BOX $39.95

- PARALLEL OR SERIAL (PLEASE SPECIFY WHICH)
- SWITCH 2 DEVICES TO 1 COMPUTER OR 1 DEVICE TO 2 COMPUTERS
- ALL PINS CONNECTED

3 WAY SWITCH BOX $99.95

- PARALLEL OR SERIAL (PLEASE SPECIFY WHICH)
- GOLD CONTACTS, ALL LINES SWITCHED
- SWITCH 3 DEVICES TO 1 COMPUTER OR 1 DEVICE TO 3 COMPUTERS

PRINTER BUFFERS

64K EXPANDABLE TO 256K

SP120P PARALLEL $139.95

- LED INDICATOR SHOWS VOLUME OF DATA IN BUFFER

SP120S RS232 SERIAL $159.95

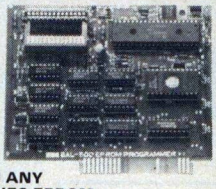
- 6 SELECTABLE BAUD RATES, FROM 600B TO 19,200B

PARALLEL SWITCH/BUFFER CABLE

- 6' CENTRONICS MALE TO MALE
- ALL PINS CONNECTED

$14.95

EPROM PROGRAMMER MODEL RP525 $59.95



- DUPLICATE OR BURN ANY STANDARD 27xx SERIES EPROM
- EASY TO USE MENU-DRIVEN SOFTWARE INCLUDED
- MENU SELECTION FOR 2716, 2732, 2732A, 2764 & 27128
- HIGH SPEED WRITE ALGORITHM
- LED INDICATORS FOR ACTIVITY
- NO EXTERNAL POWER SUPPLY REQUIRED

IC TEST CARD

- QUICKLY TESTS MANY COMMON ICs
- DISPLAYS PASS OR FAIL
- ONE YEAR WARRANTY
- TESTS: 4000 SERIES CMOS, 74HC SERIES CMOS, 7400; 74LS,74L, 74S, SOME PROMS AND RAMS

$99.95

16K RAM CARD $39.95

FOR APPLE II+

- 2 YEAR WARRANTY
- EXPAND YOUR 48K APPLE TO 64K
- USE IN PLACE OF APPLE LANGUAGE CARD

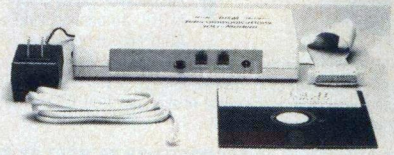
BARE PC CARD AND INSTRUCTIONS $9.95

300 BAUD MODEM

INCLUDES ASCII PRO-EZ MENU DRIVEN SOFTWARE

- FCC APPROVED
- BELL SYSTEM 103 COMPATIBLE
- AUTO-DIAL
- DIRECT CONNECT
- INCLUDES AC ADAPTOR

$49.95



CABLE FOR APPLE IIc $14.95

MODEM ADAPTOR CARD $49.95

FOR APPLE II, II+ & IIe USE WITH OUR 300B MODEM FOR A COMPLETE SYSTEM—UNDER $100!

CASE WITH KEYBOARD

FOR APPLE TYPE MOTHERBOARD

- USER DEFINED FUNCTION KEYS
- NUMERIC KEYPAD WITH CURSOR CONTROL
- CAPS LOCK & AUTO REPEAT

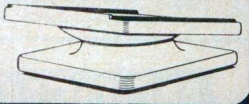
MODEL KB-1000 $79.95

KEYBOARD ONLY $49.95

- REPLACEMENT FOR APPLE II+
- CAPS LOCK, AUTO REAPEAT
- ONE KEY ENTRY OF BASIC OR CP/M COMMANDS

MONITOR STAND $12.95

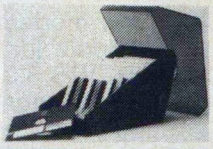
TILTS AND SWIVELS TO PROVIDE OPTIMUM VIEWING ANGLE, REDUCES OPERATOR FATIGUE



DISKETTE STORAGE FILE

$8.95

HOLDS 70 5¼" DISKETTES WITH ROOM TO SPARE



DS/DD NASHUA DISKETTES

$9.90 BOX OF 10 — **69¢ea** BULK QTY 50

JOYSTICK

CR401 $7.95

WITH APPLE ADAPTOR CABLE

PS-A $49.95

- +5V @ 5A, +12V @ 2.5A
- -5V @ .5A, -12V @ .5A

VISIT OUR RETAIL STORE LOCATED AT 1256 SOUTH BASCOM AVENUE IN SAN JOSE

HOURS: M-W-F, 9-6 TU-TH, 9-9 SAT, 9-5

PLEASE USE YOUR CUSTOMER NUMBER WHEN ORDERING

TERMS: Minimum order $10.00. For shipping and handling include $2.50 for UPS Ground and $3.50 for UPS Air. Orders over 1 lb. and foreign orders may require additional shipping charges - please contact our sales department for the amount. CA. residents must include applicable sales tax. All merchandise is warranted for 90 days unless otherwise stated. Prices are subject to change without notice. We are not responsible for typographical errors. We reserve the right to limit quantities and to substitute manufacturer. All merchandise subject to prior sale.

JDR Microdevices

1224 S. Bascom Avenue, San Jose, CA 95128

Toll Free 800-538-5000 • (408) 995-5430

FAX (408) 275-8415 • Telex 171-110

© COPYRIGHT 1986 JDR MICRODEVICES

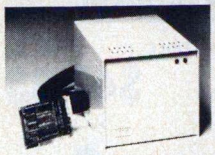
THE JDR MICRODEVICES LOGO IS A REGISTERED TRADEMARK OF JDR MICRODEVICES. JDR INSTRUMENTS AND JDR MICRODEVICES ARE TRADEMARKS OF JDR MICRODEVICES.

APPLE IS A TRADEMARK OF APPLE COMPUTER.

CIRCLE 167 ON READER SERVICE CARD

CMC HARD DISK SYSTEMS

Apple II+, Apple IIe, Apple III and Compatibles



Very reliable, fast access, shock resistant mass storage system, complete with cables and controller. Compatible with ProDOS, DOS 3.3 and SOS. Under NovoComp, Apple II Hard Disk Utility, system supports variable partitions of ProDOS, DOS 3.3, CP/M and Pascal with many utilities. More than 35,000 Hours MTBF. Automatic head park, no fear of head crash. Auto boot direct from hard disk into ProDOS menu selector with utilities installed free. System is very quiet and includes a 12 volt DC ball bearing fan. Slot card draws minimum power from bus thus possible to connect more than one system with no fear of overload. ProDOS can be one contiguous volume up to 32mb maximum.

WE CHALLENGE OUR COMPETITION TO MEET OR BEAT OUR ACCESS SPEED, RELIABILITY, COST PER MEGA BYTE, NOISE LEVEL AND OUR TURN AROUND TIME ON WARRANTY WORK.

CMC "QUICK" SERIES - Model "A-525" - ProDOS or SOS	Regular	Now Only
20mb - 5¼" Complete Hard Drive System -40,700 Blocks	$1159.00	$ 795.00
30mb - 5¼" Complete Hard Drive System -61,000 Blocks	$1695.00	$1195.00
40mb - 5¼" Twin 20/20mb Backup System -39,400 Blocks	$1795.00	$1295.00
10mb - 5¼" Removable Hard Disk System -19,700 Blocks	$2195.00	$1695.00

Price includes 90 Day Warranty, Complete with Cables, Cards, Drivers as needed.

ProFIX	Utility supports DOS 3.3 partitions on ProDOS device and can be selected to boot to any DOS 3.3 volume.	$ 39.00
NovoComp	Utility supports ProDOS, DOS 3.3, CP/M and Pascal volumes of various sizes. Leave unused space for later allocation.	$ 150.00
Extended Warranty Available - Parts and Labor - 12 Months - Only		$ 50.00

10 Day Trial Offer - Money back if not satisfied with performance.

CMC Computer System • Charles F. McConathy • Voice Phone: 714/835-2462
1514 East Edinger #H • Santa Ana, CA 92705 • 24 Hour BBS: 714/835-0910

CIRCLE 215 ON READER SERVICE CARD

MODEM MGR™ $49.99

plus $3 ship/hand • plus tax (Calif. only)

- A new modem communications program
- For Apple][+, //c, //e, enhanced //e
- Both DOS 3.3 and ProDOS support
- Supports most serial and modem cards
- Supports most smart and non-smart modems
- Fast operation (110 to 19200 baud)
- Text capture and auto disk-save
- Screen capture (snapshot)
- Full-screen editor
- Full- or split-screen display with block send (for CB, chat, packet radio)
- Macro script files for auto log-on
- Programmable function keys
- XMODEM error-free file transfer
- Supports Apple or Videx 80-column card
- On-screen time-of-day or elapsed-time display (with some clock cards)
- Unattended mode with password protection
- Emulates DEC VT-52, DG 200, others
- Supports most printer cards
- Choice of carrier or "smart" modem control
- Not copy-protected
- Available direct only. Send check to:

MGR SOFTWARE
Suite 101
305 So. State College Blvd.
Anaheim, CA 92806
(714) 993-0294

Apple, ProDOS are trademarks of Apple Computer Inc.

CIRCLE 250 ON READER SERVICE CARD

That's *Entertainment*

button presses. You can zoom any window from half size to about eight-times magnification.

You can see some large landmarks—the Statue of Liberty (sans scaffolding), the World Trade Center, the Sears Tower, the Golden Gate Bridge, and many others—during your flights. To speed up the program, you can choose a wire-frame display in place of the default 3-D shaded images.

Nonpilot's View (Rusel deMaria)

What's it like to fly Microsoft Flight Simulator? I found it easy, with a little practice. Simple take-offs and normal flight

Landing requires a fair amount of coordination.

conditions posed no problems. I had to get used to some delays in the planes' responses—more delay with more and bigger windows. Even a complete novice like me can fly pretty well, though. The trouble comes, as it does in real flying, during landing. Landing requires a fair amount of coordination and understanding—but, with practice, it too is within anyone's grasp. The manual is very informative and helped me gain enough understanding of flying to make the experience rewarding. The more realism I added to the simulation, the more difficult it became. In the end, I preferred sunny skies, calm air, and few windows.

Pilot's View (George Fontaine)

I enjoyed the program. Although nothing can take the place of real flying, Flight Simulator puts on a pretty good show. Being able to watch yourself from the spotter plane adds a novel twist, and it's something that real flight can't provide.

I did have some difficulties. I would have preferred a joystick to the mouse. A joystick just seems more natural, and I didn't really like some of the things I had to do with the mouse—especially double-clicking to obtain access to the menus. Also I was unable to use the elevator trim tabs the way I wanted to achieve level flight. The elevator seemed to overcompensate and didn't allow me enough fine-tuned control.

This is the best flight simulator I've flown on a personal computer to date, however. The program has plenty of airports available and documented in the manual. I think even experienced pilots will find the responses quick enough and the choices interesting and varied enough to add some spice to their computer-room excursions.

Rusel DeMaria and George Fontaine

Microsoft Flight Simulator
Microsoft Corporation
16011 NE 36th Way
Redmond, WA 98052-6399
(206) 882-8088
List Price: $49.95
Requires: Any Macintosh, but best with more than 128K RAM

CIRCLE READER SERVICE NO. **385**

Interlude II

MATA HARI—Interlude #156

What time does your flight arrive?

Oh, are you picking me up?

Look for a tall brunette in a trenchcoat... and nothing else.

Ah, you've been playing Interlude again!

Right.

Maybe I can catch an earlier flight.

Please do.

Interlude II. The long-awaited sequel to the first adult computer game in history is finally here. It's provocative and playful! Outrageous and romantic! It has all the excitement of the original Interlude, plus significant new features.

The computerized interview, which is taken by one or both players, has been greatly expanded. It probes your innermost desires to discern your mood of the moment, your secret longings, your special fantasies, and then suggests for your pleasure one of its more than 160 Interludes. You can ask the computer for an Interlude for now, or one for later. Special options give each player added control over surprises and special erotica hidden in the Interludes.

The original Interlude took the computer world by storm six years ago, creating a media sensation:

FORUM Magazine: *"The Interludes are imaginatively and sensitively written... the computer's recommendations are uncannily appropriate."*

US Magazine: *"The most edifying third party to join couples between the sheets since* The Joy of Sex."

Chicago Tribune: *"This marriage of computer technology and sex is natural... erases forever the image of computer-users as dull guys with slide rules in their pockets and square roots on their minds."*

Money Magazine: *"Sometimes it's easier to tell a computer what you want than it is to tell your partner."*

Interlude II will take you to the outer limits of fantasy and romance. And, if the computer selects Interlude #99 your love life may never again be the same.

Interlude II. Are you ready for it?

CIRCLE 177 ON READER SERVICE CARD

Recreational Technology, Inc., 11011 Richmond, Suite 600, Houston, TX 77042

Name _____ Age _____

Address _____

City/State/Zip _____

Accepted for payment:

☐ MasterCard® Acct. # _____ Exp. Date _____

☐ VISA® Acct. # _____ Exp. Date _____

Charge customers must sign here: _____

1-800-752-7001 ext. 829
(in Texas call 1-800-442-4799 ext. 829)

Available for Apple II, II+, IIc and IIe.[1]

[1]Trademarks of Apple Computer, Inc.

$ 39.95 Interlude II

____ Shipping $3.00 (outside U.S.A. $10.00)

____ TX residents add 6 1/8% sales tax ($2.45)

$ ____ TOTAL

A+

Who says newer is better? There's life in the old games yet.

ENTERTAINMENT Classics

Summer is upon us, and while young people's fancies turn to vacations and beach parties, software manufacturers are knocking themselves out to alert the public to their new and exciting line of computer games. For a change of pace, however, I'm going to draw your attention not to what's new, but rather to what's old—but still good. No, not good—great. Except where noted, all the games I'm going to discuss here were copyrighted in or before 1983, and in the dizzying world of computer technology, three years is a long, long time.

In the flush of the Apple II's early success, hundreds of games were released, most of which have deservedly been consigned to the Land Where Bad Computer Games Go. Many of the games that came out in those first few years are not only still with us, however, but are as good as or better than anything that is being released now. Some are even being considered modern classics.

Golden Oldies

Lest you think I'm alone in holding on to the past, you should know that a fairly new company called Software Country has brought out a package called Golden Oldies. On a two-sided disk are four classic computer games: Pong, the first, the original, the one that whetted the public's appetite for home games; Eliza, the first attempt at computer-intelligence simulation; Life, the kaleidoscopic window onto an alternate universe; and the original colossal cave Adventure, the granddaddy of all adventure games. These games are presented here in their original states, not in the modified versions in which some of us have encountered them. They are not just for purists or historians, although it is undeniably fascinating to be able to go back to the beginnings, to see how far the industry has come. You'll enjoy recognizing elements in each of these four games that newer games have borrowed freely. For example, mix the plot and thrilling danger of Adventure with the more sophisticated word-recognition parser of Eliza and, voilà, Zork! Nothing is wrong with this borrowing, mind you. Creative artists have always benefited from exposure to the best of what came before.

Since we are living in a time when Archie Bunker's chair and Fonzie's jacket are in the Smithsonian Institution, it is fitting that at least one software manufacturer is looking back, celebrating the ancestors of today's game software. By the way, this package is merely Volume One. Volume Two is promised for release in the fall of this year.

Gadzooks! Zork!

Since the runaway success of Zork I in 1979, Infocom has released 18 text-adventure games, recently upgrading the earliest ones to take advantage of 80-column screens. All these games are now available in uniform-size, snazzy packaging. Vividly descriptive prose; a superb and much imitated command parser; and packaging that is detailed and intriguing are the hallmarks of every Infocom game. Zork I, Zork II, and Zork III are expansions and elaborations of the original Adventure (see Golden Oldies), in which you explore the ruins of an ancient empire that lies far underground.

Because of their style and tone, Infocom's En-

ILLUSTRATION BY LOU BROOKS

Brooks

100% APPLE COMPATIBLE

If you own or work with a Macintosh or Apple II series computer, you need A+ Magazine.

Every month you'll find in-depth tutorials that help you take your system into more complex and comprehensive business and home applications...discover tips and the know-how to maximize your computer investment...and keep up-to-date on the latest technological breakthroughs for Apple IIs and Macs

—the only magazine Apple II and Macintosh users will ever need!

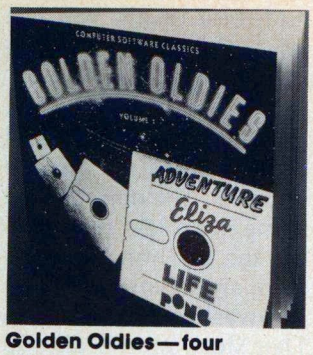
Subscribe today and save up to 50%! Call toll-free, 1-800-852-5200 or use the attached order card and tell us how much you want to save on A+!

1 year only $19.97–Save 44%

2 years only $35.40–Save 50%

Savings based on annual newsstand price of $35.40.

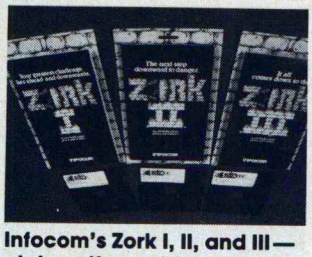
4Z353



Golden Oldies—four classics from Software Country

chanter series, composed of Enchanter, Sorcerer, and the recently released Spellbreaker, is considered a continuation of the Zorks, although the plots are different. In the Enchanter series, you start out as a neophyte wizard and eventually assume leadership of the Circle of Enchanters. Each part of the Zork and Enchanter series is a separate and complete story and can be played independently, but you will get maximum enjoyment if you experience them sequentially.

Infocom's games are divided into four categories: Mystery, Fantasy, Science Fiction, and Tales of Adventure. It's hard to pick favorites, but I'm partial to the two mysteries Deadline and The Witness, in which you, the detective, have to solve baffling homicides; and



Infocom's Zork I, II, and III—elaborations of Adventure

Infidel, one of the Tales of Adventures, in which you, as an antihero archaeologist, discover and plunder the riches of an ancient Egyptian tomb.

If you haven't yet ventured into the world of interactive fiction, Infocom's got an offer you can't refuse. You can buy an Infocom sampler that contains excerpts from Zork I, Planetfall (from the Science Fiction series), The Witness, and Infidel. As a valuable bonus, the same disk contains a tutorial that gently and amusingly guides you through the techniques of solving interactive fiction—useful for any such games, not only Infocom's.

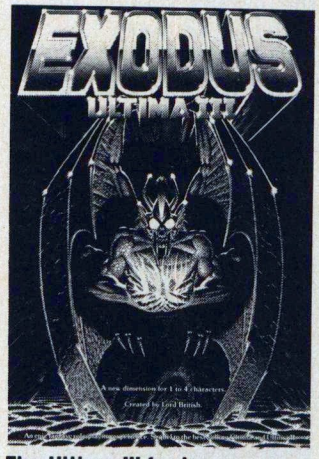
Now why can't you refuse this offer? Because the sampler retails for only $7.95, and if you don't like it, you can get a full refund from Infocom. If the sampler gets you sufficiently hooked to go out and purchase any Infocom game, Infocom will give you an $8 rebate. So what are you waiting for?

Other Adventures

As the capacity of home computers has grown, so has the complexity of adventure games. Matching Infocom's dominance in the text-adventure market, Sierra On-Line created and developed the graphic-adventure game virtually singlehandedly. Unfortunately, its first six graphic adventures, Mystery House, The Wizard and the Princess, Cranston Manor, Ulysses and the Golden Fleece, Time Zone, and The Dark Crystal, are out of print. Sierra has discontinued them because the new games bearing the company's label are much more advanced. You can still find the old games, often at greatly reduced prices, however. The Wizard and the Princess even comes for free in every package of Sierra's new-style adventure game King's Quest. If you can get your hands on an original Time Zone, the mammoth 6-disk, 12-sided epic game that Sierra claimed would take a year to play, grab it! Only 2500 copies were issued originally, and they carried a (for then) whopping price tag of $99.

Ultima

What is Ultima? Is it an adventure game? Yes. Is it also a fantasy/role-playing game? Yes. Does it have arcarde-style graphics? Yes. Does it have multilevel dungeons to explore? Yes. Towns, villages, shrines, and other landmarks to visit? Yes. People to talk with? Yes again. Monsters and assorted meanies to destroy? Yes, yes, yes. The Ultima series has all these aspects and much, much more. The author, Lord British, not satisfied to rest on his

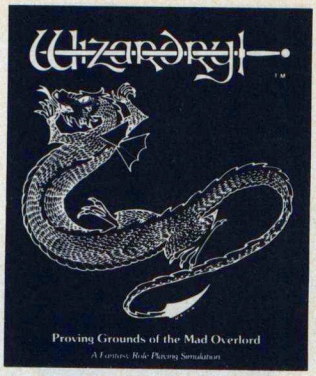


The Ultima III fantasy game, from Origin Systems

considerable laurels, completely rewrites the gaming system with each succeeding installment, making the newer Ultimas more interesting, more complex, and more playable than the earlier ones. So, should you get Ultima I, II, or III if Ultima IV (released in 1985) is such a significant improvement over the others? Sure. I've played them all (in order), and my enjoyment was greatly enhanced by my knowledge of the previous ones.

More D&D

Wizardry has consistently been a best-seller since its release in 1981, and this computerized Dungeons and Dragons fantasy/role-playing simulation still has the power

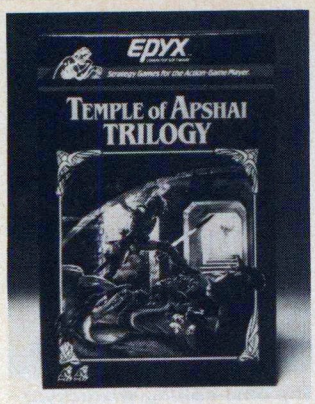


The best-selling Wizardry, from Sir-Tech Software

to bewizard you. The amazing ten-level dungeon awaits your exploration, daring you to uncover its secrets. In the first scenario, called Proving Grounds of the Mad Overlord, you create a group of characters who must adventure together in search of loot and glory. Creating characters is no small feat. You will have to experiment a bit, venturing into the dungeon several times just to see how your characters will fare.

Teamwork is terribly important, so if your characters don't seem to complement each other or if they get killed too quickly, you will have to do some rethinking. Never fear, your options are many, and eventually you will make up a group that works well together. Warning: Wizardry is highly addictive, with no known cure except fighting to the finish!

After you have conquered the first scenario, you will surely want to go on to the sequels, Knight of Diamonds and Legacy of Llylgamyn. (A rumor's going around the castle that a fourth scenario, The Return of Werdna, is going to be released—but don't tell anyone yet.) Sir-Tech Software, manufacturer of Wizardry, also makes a useful reference utility, Wiziprint, which lets you print out your game statistics.

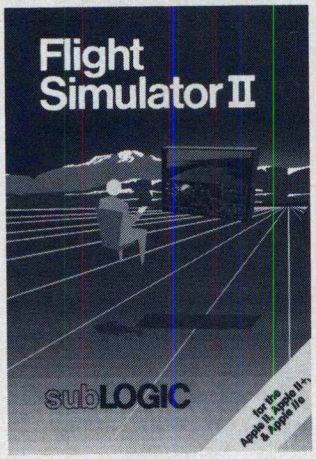


Epyx Software's The Temple of Apshai Trilogy

Wizardry, for all its complexity, is basically a text game, with a hi-res picture window in the upper left corner of the screen. The Temple of Apshai Trilogy from Epyx Software, however, is a thrilling, adventure-filled, real-time, dungeons-and-dragons game with hi-res graphics. The Apshai games were originally issued in three parts, on three separate disks. Now, Epyx has rereleased the entire saga, The Temple of Apshai, The Upper Reaches of Apshai, and The Curse of Ra, complete on one disk with 12 levels and 568 rooms to explore and 37 different monster types with which to battle. New graphics, enhanced sounds, and faster play are some of the improvements in this new version. An 81-page illustrated manual accompanies the disk, giving full descriptions of all the rooms and their contents. Will you attain the grand treasures of the Apshai priests and live to learn the secret of the Sphinx? I'll write a prayer for you. In hieroglyphics, of course.

Flying High

SubLogic's Flight Simulator II has been on the best-seller charts since its release in 1983. I was one of its early purchasers, itching to pretend that I was at the controls of the Piper Archer II—a single engine aircraft with non-retractable gear—flying around the four scenic areas available on the disk. Even though I made an honest attempt to study the flight-training manuals that came in the game package, I just couldn't coordinate my ailerons with my flaps, however. To my utter delight, I discovered the recently published book *40 Great Flight Simulator Adventures* from COMPUTE! Publications, in which the author, Charles Gulick, gives specific directions and parameters for 40 exciting customized flight scenarios. Even with all the details spelled out, I still had to learn how to fly the darn plane, but now I had more incentive to do so. I discovered many things I never knew you could do with Flight

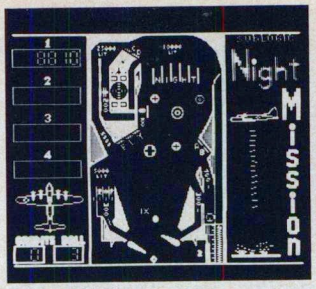


SubLogic's Flight Simulator II—another best seller

Simulator II. Being a dyed-in-the-wool New Yorker, I picked as my favorite scenarios the ones that took me flying around and between the towers of the World Trade Center and through the cables of the Manhattan Bridge. If you haven't yet made Flight Simulator II a part of your collection, you must, but make sure to get a copy of the new book, too.

Pinball

I guess I'll now have to admit that I was a pinball freak when I was younger.



Night Mission Pinball, also from SubLogic

Oh, I didn't hock the family jewels to get quarters to throw into the machine, but I wish I had a dime for every dime I spent. Now my pinball needs are more than satisfied by SubLogic's Night Mission Pinball. The decorations on actual pinball machines have themes, and this software has that of a night bombing raid. Night Mission is so good that you often forget you are not playing a real pinball machine. The sound effects are great, the ball handles realistically, and you can customize the game to suit your whims. Do you want the game to be more difficult? Easier? To award more points every time you score? Simple. Just type FIX, follow the directions in the manual, and deposit those symbolic quarters into the slot. Try the Cosmic mode first. Like wow, man!

Home Arcade Potpourri

Brøderbund Software's Choplifter! presents you with a humanitarian challenge: rescue 64 hostages from the Bungeling empire and transport them in your helicopter to the American post office. Sounds simple, eh? Heh, heh, heh! You don't get points for shooting tanks or planes, although you are able to blow them to smithereens. You score points only for rescuing the hostages.

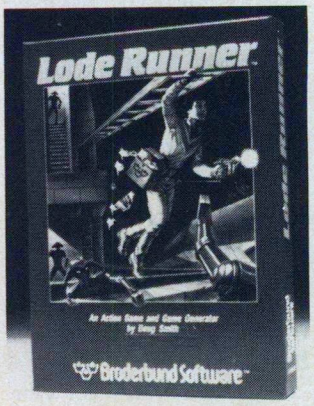
One last confession: I am a secret Robotron 2084 addict (it comes from Atarisoft). I play it every chance I get. The game is fast-moving and colorful, and, best of all, you can never play exactly the same game twice. To improve your score, you must learn strategies and coordination, not precise patterns. The object of the game is no less than saving the last human family from annihilation.

Swashbuckler, from DataMost, allows all you armchair Errol Flynns to battle hordes of dastardly pirates aboard a ship. It's stylishly animated and keyboard-controlled, and it saves your high scores to the disk.

Run, Lode Runner, Run!

Lode Runner, Brøderbund's award-winning, best-selling, arcade-style game, has a staggering 155 levels. The goal of each action-packed screen is the same: to steal gold from the Bungeling empire while eluding the guards. It's a deceptively simple premise, but Lode Runner is a challenge-and-a-half! After you get through the 155 levels, an editor on the disk allows you to create your own screens.

Lode Runner has had more than a million copies sold in Japan alone. On August 11, 1985, at the Japanese World's Fair, a Lode Runner competition was held, matching 50 contestants who were selected from 3700 applicants from all over Japan.



Brøderbund Software's award-winning Lode Runner

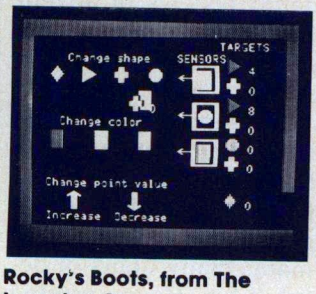
Each contestant got three minutes of playing time on a Sony Jumbotron, which has a display area of 80 × 150 feet.

The winner was 12-year-old Yasutaka Fujii. A devilishly hard sequel, Championship Lode Runner, was released in 1985, bearing the admonition "For experienced Lode Runner players only!"

Newfangled Education

Rocky's Boots is from The Learning Company, which means that it's supposed to be educational, right?

Absolutely. But it's also stimulating fun to play. Rocky's Boots' brain-teasers, which are geared for ages 9 and up, will appeal mostly to the younger end of the age spectrum but will also be appreciated by those who think they're too old for it. After going through a tutorial that teaches fundamental concepts of logic and computer circuitry, you have to design animated kicking machines (the boots of Rocky's Boots), using your newly gained knowledge. Then, if you care to, you can even design your own kicking games, keeping the basic premise of the existing ones. Still not sure if Rocky's Boots is for you? The Learning Company offers a 30-day money-back guarantee. More recent editions of Rocky's Boots have a save-game feature not available on the earliest releases.



Rocky's Boots, from The Learning Company

Gone, but Not Forgotten

Regrettably, the following games are no longer being manufactured, but around my house they are still alive and well. I mention them now because they are wonderful, and you can probably find them through mail-order dealers or at computer shows at nearly give-away prices.

Arcade Machine, from Brøderbund—You probably don't have the patience to design your own game, but you'll get a kick out of having the means to do it if you're ever so motivated.

Bandits, from Sirius—Kill the invaders before they steal your supplies. This classic features gorgeous graphics.

Muse Software's Castle

PRODUCT INFORMATION

All games work on the Apple II series (Apple II, II Plus, IIe, and IIc) and require at least 48K RAM, except where noted. Most graphic games are meant for use with a color monitor, but you can play all the games if you have a monochrome monitor, unless otherwise noted.

40 Great Flight Simulator Adventures
The Greatest Games: The 93 Best Computer Games of All Time
COMPUTE! Publications, Inc.
P.O. Box 5406
Greensboro, NC 27403
(919) 275-9809
List Price: $9.95 each
CIRCLE READER SERVICE NO. **356**

The Book of Apple Software
The Book of Adventure Games
The Book of Adventure Games II
Arrays, Inc./The Book Division
6711 Valjean Avenue
Van Nuys, CA 91406
(818) 994-1899
List Price: *The Book of Apple Software*, $24.95; *The Books of Adventure Games*, $19.95 each
CIRCLE READER SERVICE NO. **357**

Golden Oldies
Software Country
270 North Canon Drive #1297
Beverly Hills, CA 90210
(213) 278-8450
Distributed by Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
List Price: $34.95
CIRCLE READER SERVICE NO. **358**

Rocky's Boots
The Learning Company
545 Middlefield Road
Suite #170
Menlo Park, CA 94025
(415) 328-5410
List Price: $49.95
Requires: Color monitor
CIRCLE READER SERVICE NO. **359**

Temple of Apshai Trilogy
Epyx, Inc.
1043 Kiel Court
Sunnyvale, CA 94089
(408) 745-0700
List Price: $39.95
Requires: 64K RAM, color monitor
CIRCLE READER SERVICE NO. **360**

Ultima II
Sierra On-Line, Inc.
Coarsegold, CA 93614
(209) 683-6858
List Price: $59.95
Ultima III
Ultima IV
Origin Systems
340 Harvey Road
Manchester, NH 03103
(603) 644-3360
Distributed by Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171
List Price: $59.95 each
CIRCLE READER SERVICE NO. **361**

Infocom games
Infocom
125 Cambridge Park Drive
Cambridge, MA 02140
(617) 492-6000
List Price: Zork I, Enchanter, The Witness, $39.95 each; Zork II, Zork III, Sorcerer, Infidel, $44.95 each; Deadline, Spellbreaker, $49.95 each; Four-In-One Sampler, $7.95
CIRCLE READER SERVICE NO. **362**

Sir-Tech games
Sir-Tech Software, Inc.
Charlestown-Ogdensburg Mall
Ogdensburg, NY 13669
(315) 393-6633
List Price: Wizardry: Proving Grounds of the Mad Overlord, $49.95; Knight of Diamonds, The Second Scenario, $34.95; Legacy of Llylgamyn, The Third Scenario, $39.95; Wiziprint, $24.95 (Wiziprint requires printer with 80 columns or more)
CIRCLE READER SERVICE NO. **363**

Flight Simulator II
Night Mission Pinball
SubLogic Corporation
713 Edgebrook Drive
Champaign, IL 61820
(217) 359-8482
List Price: Night Mission Pinball, $34.95; Flight Simulator II, $49.95
CIRCLE READER SERVICE NO. **364**

Championship Lode Runner
Choplifter!
Lode Runner
Brøderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 479-1170
List Price: $34.95 each
CIRCLE READER SERVICE NO. **365**

Robotron 2084
Atarisoft
1196 Borregas Avenue
Sunnyvale, CA 94088
(408) 745-2000
List Price: $19.95
CIRCLE READER SERVICE NO. **366**

THE SEIKO® DATAGRAPH 2001 From Computer To Wrist In 7 Seconds!

2K RAM, 2K ROM, 40 Character Display, Microprocessor, Power Supply & Modem ON YOUR WRIST!

Seiko's new Datagraph 2001 is the ultimate organizational tool — a microprocessor driven timepiece that lets you take computer generated information anywhere you go. With a 2K RAM memory that stores any portion of your schedule or notes. An easy to read LCD, four line display that displays at the touch of a button. And a wrist alarm that sounds when something important is scheduled.

A COMPLETE HARDWARE/SOFTWARE SYSTEM, FOR ALL APPLE® // COMPUTERS!

Time-Trax Software
Powerful, easy-to-use, menu-driven program for scheduling important dates and events. Schedule 23 months on a disk, 99 events/day, get advance notice from 15 min. to 14 days in advance, print out schedules and load data into wrist terminal!

SEIKO Wrist Terminal
A microprocessor driven, full function watch (time, date, alarm & chronograph) and computer terminal with 2K RAM in one package.

ProDOS™ Clock & Interface
A unique wireless interface transfers data into the watch in only 7 seconds! The built in ProDOS clock can be used with ALL ProDOS software for time & date stamping. Displays the time & date on Appleworks™ main menu, too!

BUSY PEOPLE EVERYWHERE need the Seiko Datagraph 2001. Never again will you miss an important appointment, meeting, birthday or dinner date. On the road carry your schedule, directions and phone numbers. Use it to remind you of bills to pay or medications to take.

Put it all together, and you have a system that makes every other electronic scheduler obsolete. It's an extraordinary new kind of computer peripheral.

ONLY **$189.95** COMPLETE Introductory Offer

ORDER TODAY! MasterCard, Visa & COD

CPU **Creative Peripherals Unlimited, Inc.**
22952 Alcalde #160,
Laguna Hills, CA 92653

800-228-1165 · CA 714-770-3334

Seiko and Apple are registered trademarks of Hattori Corporation of America and Apple Computer Inc. respectively. ProDOS and AppleWorks are trademarks of Apple Computer, Inc. Time-Trax is a trademark of Creative Peripherals Unlimited, Inc.

Wolfenstein pits you against those nasty Nazis as you use all your resources to escape from a four-level maze-like castle. You get to don a Nazi uniform to avoid detection, steal bullets and keys, kill the guards, and eventually locate a set of secret Nazi plans that the Allied forces would love to get their hands on—if you can get out alive.

Drol, from Brøderbund—Cute and colorful. Your object is to reunite a mother with her two children, who were bewitched and are wandering around a maze populated by fantastic creatures. You are equipped with a jet-pack and some killer pellets.

Madame Shepps's Tarot (G.Y.S.T.)—Don't know where you'll find this one, but if you see it, get it! Madame Shepp reads your fortunes, using her tarot cards, which you electronically shuffle and cut. Traditional interpretations.

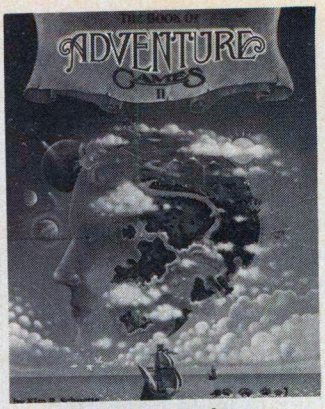
Pac-Man (Atarisoft)—Is there anyone out there who has never eaten even one power dot? There's a reason why Pack-Man is arguably the most famous computer game ever. Find it, and you'll know why.

Spare Change (Brøderbund)—As the manager of an arcade, you must outwit the Zerks as they attempt to steal five of your tokens. Slapstick action; hilarious fun.

Threshold (Sierra On-Line)—Space Invader-like action. Still one of the most beautiful and challenging games ever released for the Apple. Many screens of cleverly designed alien what-nots.

And Still More!

There are lots more games that I don't have room to mention here. You can find out about many more of them, however, from the invaluable yearly guide *The Book of Apple Software*, published by Arrays, Inc. Hundreds of different software packages are discussed in detail, with concise, readable, objective descriptions to aid in your purchase decisions.



***The Book of Adventure Games*, from Arrays, Inc.**

Stuck in the middle of that adventure game? Arrays also publishes *The Book of Adventures—Volumes I and II*, in which you can find maps and extensive hints for solving dozens of the most popular adventure games, including nearly every one I've mentioned above.

Finally, from COMPUTE! Publications you can get *The Greatest Games: The 93 Best Computer Games of All Time*, written by Dan Gutman and Shay Addams. It is an entertaining paperback that contains lively, in-depth reviews of adventure games, role-playing games, sports games, and arcade games.

So, support your favorite game manufacturer's latest products, but don't forget those old reliable games that have provided many, many hours of devoted fun. Happy gaming to you! ✚

Donald Oliver is an author and composer whose latest book is How to Audition for the Musical Theater *(Drama Book Publishers). He wrote the score for the Broadway musical* The Case of the Dead Flamingo Dancer.

CIRCLE 159 ON READER SERVICE CARD

BY RUSS LOCKWOOD

YOUR MONTHLY MODEM LINE

Service starts and stops, Macintosh E-mail, and Teletips galore

As more and more companies enter the telecommunications world, they find that the initial, simple desire to exchange data can transform into a complicated task of matching parameters and protocols. Then factor in micro-to-mainframe links, local-area networks, data transfer with other companies, and new technology, and the situation turns into a data-processing-manager's nightmare.

To straighten out the telecommunications tangle, several companies have banded together to form the Corporation for Open Systems, a nonprofit group to recommend industry standards for communications, microcomputers, and other equipment. The organization received a big boost when 13 companies, among them Boeing Computer Services, Eastman Kodak, and Hughes Aircraft, became members.

Of course, an industry "standard" sometimes turns out to be a double standard, as financial risks outweigh displacing an entrenched technology. Nevertheless, manufacturers and users are looking for the ease and convenience of compatibility that comes with such a standard. COS aims to have a say about that compatibility.

A Service Stops . . .

Back in February, I wrote about an inexpensive telecommunications service owned by Knight-Ridder Newspapers called Viewtron. The company started making a big push for subscribers in the last quarter of 1985 and even managed to lure the Independent Commodore Users Group (ICUG) to switch over from CompuServe. Although the marketing effort quintupled the number of subscribers (from 3000 to 15,000), Knight-Ridder closed the service on March 31. Last-minute negotiations to sell Viewtron to ICUG fell through for lack of financing.

Baseline provides information on more than 200,000 people—actors, directors, and everyone else who appears in the credits.

Viewtron originally started in 1983 as a videotex service, using North American Presentation Level Protocol Syntax (NAPLPS) to transmit text and graphics. The only problem was that you needed a $600 dedicated AT&T terminal to use it. The company ignored personal-computer owners until 1985, when it started offering an ASCII version of its service. Most analysts agree it was too little, too late.

Knight-Ridder officials maintain Viewtron was a research venture. This venture cost the company an estimated $15 million in 1984 and $12 million in 1985.

. . . And a Service Starts . . .

Who does producer Ivan "Ghostbusters" Reitman call when he wants news about the entertainment industry? How about Walt Disney Studios, RKO Pictures, Home Box Office, and industry luminaries?

A new service named Baseline.

It provides information on 34,000 television, film, and theatrical productions, as well as on more than 200,000 people—actors, directors, key grips, and everyone else who appears in the credits.

The program charts audience statistics, lists literary properties with

ILLUSTRATION BY MAX SEABAUGH

available film rights, and provides current information about projects that are in production. Yes, it even offers electronic mail and stock prices.

Baseline carries a $97 sign-up fee and a $75 monthly subscription fee (including one hour of "free" usage) and charges $45 per hour.

. . . And a Service Continues

Mnematics is not exactly a household name, but it is trying to be. This little-known company opened for telecommunications business in 1983 and offers the standard fare of services at 300 and 1200 bps for the low, low price of $3.49 per hour (after a $39.95 sign-up fee).

People who run timesharing systems may find Vision-Plus a vision come true.

How?

"Low overhead," deadpans company spokeman Richard Hall.

I'll take a closer look at Mnematics in an upcoming column.

TELETIPS

This section deals with news, views, and breakthroughs in the telecommunications world. It also offers a quick overview of new features added to services we have already reviewed.

Macintosh Forever

In the corporate world, the IBM PC reigns supreme. IBM knows it. Apple knows it. Third-party manufacturers know it. So tell me, does General Electric Information Services Company (GEISCO) know it? Judging strictly from its Macintosh-only service BusinessTalk, I guess not.

BusinessTalk lets companies with Macintoshes communicate over GEISCO's national network. It takes advantage of the pull-down menus, icons, scroll bars, and other characteristics of the Mac environment. It even lets you work on one file while printing out another.

At $40 per hour, BusinessTalk is not cheap, and prototype systems have had their problems. Still, it is a definite step in the right direction.

By the way, GEISCO evidently does know all about the IBM PC. It is developing a version of BusinessTalk that works with Microsoft Windows, a Mac-like environment for MS-DOS computers.

Multitalented Terminal

Making your Macintosh emulate a terminal is no big deal. Several programs already exist. Vision-Plus from Rammas Vision is the first program I've run across, however, that makes the Mac emulate a terminal server that can control up to eight concurrent host processes—all the while retaining the mouse- and icon-driven environment.

Most of us would never even think about such grandiose communications schemes, but people who run timesharing systems such as DEC's VMS, Berkeley's UNIX 4.2, AT&T's UNIX V.2, IBM's VM/CMS, and DG's AOS/VS may find Vision-Plus a vision come true.

World's Biggest Blooper

Dick Clark might appreciate it, but a couple of sharp-eyed readers didn't. In the April issue, under the capsule description of Write Away, I wrote that the program was DOS 3.3-based and could not run on the IIc or Pro-DOS-equipped IIe.

Absolutely wrong. Guilty as charged. I plead insanity. Evidently a

Ribbon Land

MORE THAN JUST RIBBONS

ORDER *HOTLINE* 1-800-221-4892

In NJ or for Information CALL 201-842-1437

FREE GIFT WITH ORDERS OVER $75

NYLON Ribbons Printer Type	Black EACH	Black 6+	Color EACH	Color 6+	Transfer EACH	Transfer 4+
*Apple Imagewriter, DMP, Prowriter	4.50	4.00	5.50	4.50	6.50	6.00
Apple Imagewriter II	4.50	4.00	10.00	9.00	—	—
Apple Imagewriter II (Reload)	—	—	7.00	6.50	12.00	11.00
Canon A-40/50/55, 1080A/1088/1156	6.00	5.50	6.50	6.00	—	—
Comrex 220, Axiom GP550, GP700	5.00	4.50	6.00	5.50	—	—
*Epson MX, FX, RX 80/85, Citizen 10/20	4.50	4.00	5.50	4.50	6.50	6.00
Epson MX, FX, RX 100/185, Citizen 15/25	6.00	5.50	7.00	6.50	—	—
Epson LQ 800	5.00	4.50	6.00	5.50	7.00	6.50
Epson LQ 1000	6.50	6.00	7.50	7.00	—	—
Epson LX 80/90, Homewriter 10	5.00	4.50	6.00	5.50	7.00	6.50
Epson LQ 1500	5.50	5.00	6.00	5.50	—	—
*Okidata 82, 83, 92 & 93/Star SG10	2.50	2.25	4.00	3.50	5.00	4.50
Okidata 182, 192 & 193	7.00	6.50	—	—	—	—
Panasonic 1090, 1091 & 1092	7.00	6.50	8.00	7.50	—	—
Smith Corona D 100/200, RS DMP 120	6.00	5.50	7.00	6.50	—	—
Toshiba 1350, 1351, P1340, P351, 341	6.00	5.50	7.00	6.50	—	—

Colors: Red, Yellow, Blue, Green, Brown, Purple, *Orange, Silver & Gold.
Transfer Colors: Red, Yellow, Blue & Black.

MULTI-STRIKE Black Film Ribbons	EACH	6+
Apple LQP, Qume IV	5.00	4.50
Brother HR 15/35, Comrex II	5.50	5.00
Diablo Hi-Type II	3.50	3.00
Epson DX-10	6.50	6.00
Juki 6100	4.00	3.50
Nec 3500	5.00	4.50
Nec 5500	5.00	4.50
*Spirit 80, BMC-80, Legend 880, 808, 1080, 1380	6.00	5.50

*Available in Red, Blue, & Brown. (Add $1.00 Each)

THIS MONTH'S SPECIALS

Mouse Pad $6.00
Verbatim 5 1/4" SSDD/DSDD Disks ..... Pack of 20 — 69¢ Each
Fuji 3 1/2" Single Sided Disks ..... Pack of 20 — $1.59 Each
Prince Software w/Ribbons ..... $42.00 w/o Ribbons $32.00

T-SHIRT PRINTING CENTER

Color Transfer Pens (Set of 5 Fine Line: Red, Yellow, Blue, Orange & Green + Instructions) $9.00
Color Transfer Pens (Set of 5 Marker Tip: Red, Yellow, Blue Orange & Green + Instructions) .. $13.00
T-Shirts, Baseball Caps, Puzzle Blanks, & More ..... CALL
Heat Presses for professional results ..... Start at $299.95

MacInker - Re-Ink Ribbons for about 5¢
Apple Imagewriter, DMP, Prowriter 41.95
Epson MX, FX, RX 80/85/100/185/286 ..... 49.95
Universal Base plus Driver Kit for Most Nylon Ribbons 64.95
Ink Kit (Available in Red, Yellow, Blue, Green, Brown, Purple, & Black 8.00

Color Computer Paper - Red, Blue, Gold, Lt. Blue, Pink, Ivory, *Canary & Green.
100 Sheets ..... $6.00 600 Sheets or Rainbow Pack $24.00
*Not included in Rainbow Pack.

Color Envelopes - Invitation Size/Red, Blue, Gold, Lt. Blue & Pink.
50 Envelopes ..... $4.50 100 Envelopes ..... $8.00 250 Envelopes $15.00

PRINT HEAD CLEANING KITS - Helps prolong ribbon & print head life.
Apple Imagewriter I & II, DMP, Prowriter 8.00
Epson MX, FX, RX 80/85, Citizen 10/20 ..... 8.00
Epson MX, FX, RX 100/185/286, Citizen 15/25 ..... 10.00
Epson LX-80/90, Homewriter 10 ..... 10.00
Epson LQ 1500 ..... 8.00
Okidata 82, 83, 92 & 93, Star SG10 ..... 5.00

APPLE SKINS - Anti-Static, Rip-Stop Nylon Dust Covers
Designer Dust Covers at Vinyl Prices!
Apple IIc or IIe w/Monitor II Cover 16.00
Apple IIc w/Color Monitor Cover 18.00
Apple IIe Professional System Cover 20.00
Apple IIc, IIe or Uni Disk Drive Cover 6.00

CALL FOR PRICING ON ALL HARD TO FIND RIBBONS!
School & Business Purchase Orders Accepted. NJ & PA Residents add 6% Sales Tax. MC, Visa, COD ORDERS Accepted. Ribbon orders over $50 are shipped free, UPS Ground Only. All other orders add $3 S & H, UPS Ground Only. Prices subject to change without notice.

Ribbon Land • P.O. Box 8634 • Dept. AP8 • Red Bank • NJ • 07701

CIRCLE 202 ON READER SERVICE CARD

Computer Network

CALL TODAY 1-800-621-0937

FREE Updates on Ramcard Software* • FREE 64k on 256k & 512k IIe Ramcards*

10 DAY *100% MONEY BACK GUARANTEE* ON ANY HARDWARE PRODUCT*

*In 10 days of receipt we will refund your money if you're not 100% satisfied with any Hardware Product shipped to you, (less shipping).

BUSINESS

ASCII Express ProDOS /DOS	ea	77.95
Bank Street Mailer		40.99
Bank Street Writer 64K/128K	ea	40.99
Bank Street Speller		40.99
Bank Street Filer 64K/128K	ea	40.99
BPI GA,AR,AP,PAY Pro	ea	208.95
Bookends ProDOS-2C/2E-128		64.95
Crosstalk		109.00
dBase II (Req CP/M 80)		289.00
Dollars & Sense (IIc/IIe-128k)		67.95
Fontrix		63.00
Format II Ehanced 64K or 128K	ea	86.50
Manage Your Money		102.00
MouseWrite 2C/E-ENH 128		72.00
Merlin Pro 2C/2E-128K		64.95
PFS 1st Success F/R/W Pro-128K		126.00
PFS File & Report	ea	68.50
PFS: Graph		68.50
PFS Write ProDOS-2C/2E-128K		68.50
ProFILER		68.95
Sideways Pro DOS		CALL
Sideways Dos 3.3		32.00
Supercalc 3a 2C/2E ENH		98.95
The Handlers Package		95.00
The Graphics Department		65.00
Think Tank		84.95
VIP Professional //e,//c -256k		149.95
Word Perfect		98.00
Word Juggler III		159.95
Your Personal NetWorth		50.00

APPLEWORKS

Appleworks II+ Modifer 128k.	47.95
AutoWorks	27.95
FontWorks	37.95
Graphworks	55.95
HabaMerge	48.50
Haba Templates	19.95
Jeeves (REQ Clock)	34.95
MacroWorks *New!*	22.95
Megaworks	68.95
Pinpoint 2C/2E-ENH 128K ProDOS	34.95
Pinpoint Tool Kit	25.95
Pinpoint Pop-up Speller Checker	34.95
Pinpoint Print Enhancement	13.95
Pinpoint & Pop-up Speller	72.95
Quicken (New)	52.95
Reportworks	68.95
Sensible Speller DOS or ProDOS ea	71.00
Sensible Grammar	59.95
SpellWorks	28.95
ThinkWorks (New)	95.00

HOME-HOBBY

Basic Building Blocks	24.00
Choplifter	22.89
Copy II	22.50
Dazzle Draw (Imagewrite II compat)	35.15
Deadline	28.50
Deluxe Music Construction	25.00
Enchanter	23.45
Fantavision (Req. Mouse/Color mon.)	28.95

HOME-HOBBY

F-15 Strike Eagle		20.50
Flight Simulator II		29.95
GATO		20.95
Graphics Expander Req. Printshop		23.95
Home Accountant		39.00
King's Quest II /II (C/E-128K)	ea	29.30
Lode Runner		20.50
Millionaire		24.00
Mind Prober		33.95
Newsroom +/E/C		30.50
Newsroom clip art 1		16.25
One on One		24.95
Pinball Construct		25.00
Printshop +/C/E		26.75
Printshop GL 1,2,3	ea	14.25
Printshop Refill		12.25
Printshop Companion		22.50
Sargon III (II, Mac)		29.30
Seven Cities-Gold		25.50
Silent Service		24.95
Skyfox		25.50
Super Zaxxon		19.50
Star Trek-Kobayashi		24.50
Turbo Pascal (Req. CP/M)		35.95
Turbo Toolbox		30.00
Shadowkeep		27.49
Summer Games		24.00
Take 1		38.89
Ulitma III / IV		34.95
UniDOS (use DOS 3.3 on Unidisk 3.5)		29.95
Winter Games		24.00

EDUCATION

Early Games for Young Children		16.00
Master Type		23.45
Math Blaster		29.30
Typing Tutor III		29.30
Word Attack		29.30
Speed Reader II		41.00
Mission Algebra		28.00
Turtle Tracks		24.00
Spinnaker Full Line		$CALL
Stickybear ABC/#'s/Math/etc	ea	24.00
Where is Carmen San Diego?		24.25
Algebra I thru IV	ea	26.95
Algebra V & VI		34.95
Alphabet Zoo		18.95
Fraction Fever		17.95
Visable Computer 6502		37.95
Spell It		28.69
Snooper Troops 1 or 2		22.95
Rocky's Boots		31.95
Trains		20.95
Spellicopter		24.00
Charlie Browns's ABC's		29.95
Snoopy's Rescue		29.95
Beneath Apple DOS		16.95
Beneath Apple Pro DOS		16.95
Story Maker		24.50
Alge-Blaster (Davidson & Assoc)		34.95
Turbo Tutor		24.95
Sticky Bear Reading		23.99

CHECKMATE TECHNOLOGIES

Multiram IIe 64k	$ 119
Multiram IIe 320k	165
Multiram IIe 576k	205
Multiram IIe 768k	237
Multiram IIe 64k w/RGB	158
Multiram IIe 320k w/RGB	202
Multiram IIe 576k w/RGB	235
Multiram IIe 832k w/RGB	259
Multiram IIe 1 meg w/RGB	279
16 bit Microprocessor IIe	159
Multiram IIc 256k CX	179
Multiram IIc 512k CX	239
Multiram IIc CX kit 16 bit	129
Pascal RAM software	20
CP/M RAM software	20
256K Ram Chips 150ns	4
64k Ram Chips 200ns	.75
Call For Larger Memory Sizes	

NEW! Laser 128

AppleWorks Compatible

- 65C02 Processor
- Full 128k of RAM
- Built-in 5.25-inch Disk Drive
- Most Apple //c Compatible on the Market
- External Apple II-compatible expansion slot
- 10-key numeric keypad
- Mouse and Modem Interface
- Serial & Parallel interface

$395

APPLIED ENGINEERING

Ramworks II 64k	$140
Ramworks II 320k	188
Ramworks II 576k	226
Ramworks II 832k	268
Ramworks II 1 meg.	296
Ram Factor 256 to 1meg	CALL
Z-RAM II 256k //c	296
Z-RAM II 512k //c	340
Z-RAM II 768k //c	384
Z-RAM II 1 meg //c	515
Veiwmaster (+/E)	106
Z-80 Plus (+/E)	106
IIc System Clock	66
Timemaster II H.O.	101
TRANSWARP	220
16 Bit Option for IIc & IIe	70
Z-80c card for IIc	115
16k Ram card for II+	56

DISKETTES

Elephant SS/SD	9.95
Elephant SS/DD	12.95
Elephant DS/DD	15.95
Verbatim SS/DD	14.95
Verbatim DS/DD	16.00
Diskettes 3 1/2 SS/DD	24.95
Diskettes 3 1/2 DS/DD	29.95
Diskette Cleaner kit 5.25	7.95
Disk Notcher (use both sides of disk)	9.95
Disk case (holds 10 Disks)	3.00
Diskette Carousel (holds 72) 5.25	15.95

Disk Drives

Disk Drive IIe Applied Eng.	119.00
Disk Drive Controller AE	67.95
Mitac Disk Drive //c	129.00

PRINTERS

Epson LX-80	279.95
Epson FX-85 80 col	419.95
Epson FX-286 136 col	609.95
Epson LQ 1000 Ser. & Par.	759.95
Epson LQ 800 Ser. & Par.	619.95

RIBBONS

Imagewriter	3.95
Prowriter 8510	3.95
Epson FX/RX 80	3.95
Epson FX/RX 100	5.83
Epson LX-80	5.83
Okidata 192	6.65

OTHER RIBBONS CALL
COLOR RIBBONS CALL

HARDWARE

Amdex 300 12"	123.00
Cables for Modems & Printers ea	24.95
Color 300	225.00
Color 600	399.00
RGB Interface	127.00
BusinessCard	145.00
Kraft Quick Stick	CALL
Grappler +	72.00
Serial Grappler	79.00
Buffered Grappler + 16K	131.50
Hot Link, S-P cable for //c	44.00
Grappler C	75.00
A-B switch Box 25pin	59.95
A-B Switch Box 36pin	99.95
Muppet Keys	44.00
Muppet Touch Tablet	75.00

HARDWARE

Koala Pad //e - //c	75.00
UltraTerm 132 Col. (II+/IIe)	179.00
Mach III w/Fire (II+/IIe)	32.25
IIe 80Ram Card	55.95
System Saver	62.00
The Cricket //c	111.00
Thunderclock +	103.00
Disk Notcher	9.95
X-10 Powerhouse Interface kit E/C	55.95

MODEMS

Hayes Smartmodem 1200	358.00
Hayes Smartmodem 300	132.00
Micromodem IIe w/Smartcom I	129.00
Hayes 2400 External Modem	577.00
Hayes 300 Baud Smartmodem //c	155.00

NO ADDITIONAL CHARGES FOR VISA & MASTERCARD ORDERS

For fast delivery send cashier's check, certified check or money order. Personal and company checks allow 15 days. Shipping - Software ($3.00 min.). Shipping - Hardware (please call). Sorry No C.O.D.'s. School P.O.'s, Add 3% ($3 min). Am. Ex.-5%. *NM Res. add 4.75% sales tax. Prices & availability subject to change without notice. All products are new and include factory warranty, therefore All software sales are final. We do not guarantee compatibility. Products purchased in error subject to 15% restocking fee. Defective merchandise replaced with same item only. Foreign add 18% ($25 min). Not Responsible for typographical errors. Mail Orders to COMPUTER NETWORK, 3204 NATL. PARKS HWY., CARLSBAD, NM 88220
*To update your Multiram, RamWorks, & Z-RAM software Disk, please send a Diskette with a self stamped package for Return.

CIRCLE 137 ON READER SERVICE CARD

Turn your Apple into a CAD workstation for just $99

Finally computer-aided design is affordable...with the popular CADAPPLE-Entry Level software package. Among its professional features are:

- Easy "menu" structure and single keystroke operation
- Full "floating point" internal calculations for unlimited zoom—a true CAD system
- Automatic dimensioning, built-in primitives including ellipses and polygons, multiple drawing layers, dual "snap" modes, independent X-Y grids, text at any angle
- Interactive graphics so your drawing changes visibly as you work, including scale, rotate, etc.

In addition to the complete CAD software, you'll receive an audio tour on cassette tape to help get you started...the 170-page CAD-TUTOR training manual including drawing exercises...function key overlay...and a fully-illustrated reference manual. The CADAPPLE program is used daily in thousands of schools and businesses around the world for computer-aided design.

Call today 1-800-228-2028, Ext. 82 with VISA or MasterCard
(or send check or M.O. for $99 to T&W Systems, 7372 Prince Dr., Huntington Beach, CA 92647. Calif. add 6% sales tax.)

Runs on Apple II series with 64K, 2 disk drives. Supports joystick, Apple mouse or Koala pad. Output to Hewlett-Packard, Apple or Houston Instruments plotters using Apple Super Serial card or Apple IIc serial port.

CIRCLE 102 ON READER SERVICE CARD

LEGEND™ CARDS

EXPAND APPLEWORKS™ on Apple II, II+, IIe, IIc and Franklin

C'CARD™...1 MEG FOR IIc $369

FREE APPLEWORKS™ PATCH
256K to 1 MEGABYTE OF MEMORY
HIGH SPEED DISK EMULATION
USE MOUSE WITH APPLEWORKS™

S'Card™ for the II, II+, IIe, III, Franklin

•Slot Independent • 1024K AppleWorks™ on Apple II, II+, IIe, Franklin

E'Card™ for the IIe

• 80 Column Display • RGB • Use Mouse with AppleWorks™

Send me info on:
☐C'Card (IIc)
☐E'Card (IIe)
☐S'Card (II/II+, IIe Franklin)
☐Desktop Mouse

NAME _____ PHONE _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

LEGEND INDUSTRIES LTD. (800) 5-LEGEND or (313) 674-0953•2220 Scott Lake Rd•Pontiac, MI 48054

Legend, E'Card, S'Card, C'Card and Desktop Mouse are trademarks of Legend Industries, LTD. Apple and AppleWorks are trademarks of Apple Computer, Inc.

CIRCLE 287 ON READER SERVICE CARD

power surge to the brainRAM disrupted an intention to differentiate between DOS 3.3- and ProDOS-formatted disks. Although ProDOS is the operating system of choice for the IIc and enhanced IIe, Apple's commitment to compatibility allows the use of DOS 3.3 as well. Sorry for the gaffe, folks.

My new CompuServe number is 73537,1075. My old number is no longer valid, and messages sent to it have fallen into electronic oblivion. You can also reach me via MCI Mail at RLOCKWOOD.

To reach *A+* magazine proper, send MCI Mail to APLUS or dial the *A+* BBS at (415) 474-8608. *A+* magazine is also setting up a RoundTable on GEnie (see my June 1986 column for a review of the service). Stay tuned for details.

By the way, the pricing structure for GEnie outlined in the June column is incorrect. The correct pricing structure is as follows:

GEIS charges an $18 sign-up fee for *all* speeds of GEnie. There is no additional sign-up surcharge for the 2400-bps service; however, there is a $10 per hour surcharge for 2400-bps service *usage*. Thus, non-prime-time rates for GEnie are $5 per hour for 300- and 1200-bps service, and $15 per hour for 2400-bps service. Prime-time rates are $35 per hour for 300- and 1200-bps service and $45 per hour for 2400-bps service. ✚

FURTHER INFORMATION

Baseline
80 East 11th Street
New York, NY 10003
(212) 254-8235
CIRCLE 352 ON READER SERVICE CARD

Mnematics
Sparkill, NY 10976
(800) 322-3633
CIRCLE 353 ON READER SERVICE CARD

BusinessTalk
General Electric Information Services
401 North Washington Street
Rockville, MD 20850
(301) 340-4000
CIRCLE 354 ON READER SERVICE CARD

Vision-Plus
Rammas Vision
2685 Marine Way
Shoreline 1325
Mountain View, CA 94043
(415) 969-2662
CIRCLE 355 ON READER SERVICE CARD

HIGH-TECH SEX

INTRACOURSE™

Put your sex life in drive with **IntraCourse**, the revolutionary new software program for human sexuality that is sweeping the nation.

Unravel your wildest fantasies with guaranteed confidentiality. Or excite your friends and enliven your next party with **IntraCourse**. Explore each others' sexual personalities. Have **IntraCourse** improve your relationships and compatibility with information and research from more than 100 sources and studies in human sexuality —including Kinsey and Masters & Johnson.

Create your own profile and see where your sexual personality fits on the social continuum of behavior and preferences. Compare your friends. Unshackle your fears with **IntraCourse** and more fully involve yourself in sex.

Endorsed by noted psychologist, Dr. Joyce Brothers, **IntraCourse's** 2-disk program is available in IBM, Commodore, Apple and compatible formats for your PC.

Includes interactive sexual questionnaire, sexual compatibility menu, interactive sexual/medical dictionary, public sexuality statistics and information on human sexuality. Order this educational and entertaining software today.

* *"It's going to go through the roof."* — Las Vegas Review Journal

* *"After months of work by a hired team of programmers and psychologists* ***(IntraCourse)*** *is about to become computer history."* — Miami Herald

"GET WITH THE PROGRAM"

SPECIAL INTRODUCTORY OFFER: ONLY $49.95, plus tax/handling

CALL TODAY! 1-800-INTRACO/1-800-468-7226 (toll free)

American Express, Mastercharge, VISA, Diners Club, Carte Blanche

IntraCorp 13500 SW 88th Street, Suite 185, Miami, FL 33186 / Allow 2-3 weeks for delivery

CIRCLE 107 ON READER SERVICE CARD

INTRACOURSE™ *The "Sexy" Software*

JE520 Voice Synthesizer
for Apple II, II+ and *IIe*
JE520AP. . . . $119.95
JE523TS (Software) $ 9.95

JE614 Numeric Auxiliary Keypad
for Apple *IIe**
JE614. . . . . $49.95

12" Monochrome Monitor
for Apple II, II+ *IIe* and *IIc*
AMON. $99.95

Joystick
for Apple *IIe*
AJS-1. . . . . $19.95

Joystick
for Apple II, *IIe* and IBM
UJS-1. . . . . $29.95

Add'l. Apple Compatible Products

Cooling Fan
for Apple II, II+ and *IIe*
APF-1. . . . . $39.95

Switching Power Supply
for Apple II, II+ and *IIe*
KHP4007. . . . $39.95

Parallel Printer Interface
for Apple *IIc*
MW-100. . . . . $69.95

VERSACARD
for Apple II, II+ and IIe
VERSACARD $169.95
(Serial, Parallel, Clock/Calendar and BSR)
PM-SC (Serial Cable) . . . $24.95
PM-PC (Parallel Cable) . . . $24.95

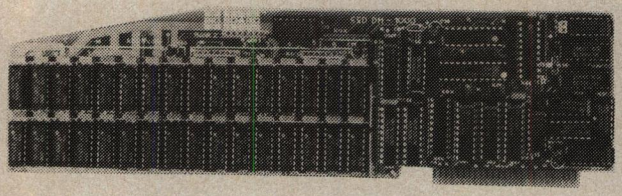
Mail Order Electronics - Worldwide
Jameco ELECTRONICS
Serving the Computer Enthusiast Since 1974
©1986 Jameco Electronics

QUALITY COMPUTER PRODUCTS FOR APPLE II, II+, *IIe*, *IIc* and Macintosh*

1MByte RAM Card
for Apple II, II+ and *IIe**

BIG BOARD

NEW!



Introducing a third generation memory card that gives you both great expandability and great versatility at an extraordinary price. **Versatility to users** means that BIG BOARD is compatible with software written for the Synetix SSD (Flashcard) as well as for Jameco's JE868 128K RAM Card. Big Board makes available 426K of worksheet space, using the program THE Spreadsheet Version 2.0. It is compatible with PLUSWORKS XM for running Appleworks on the Apple II. Versatility also means that BIG BOARD comes complete with RAMDISK software for DOS 3.3, ProDOS, Pascal 1.2, and CP/M for Microsoft's Softcard. A separate driver is available for the AppliCard (StarCard). **Versatility to programmers** means that you can choose the active addressing mode both via a jumper on the BIG BOARD or through software commands. Choose the mode that is most convenient for you in developing your application. The byte addressing mode has no conflicts with your use of the standard language card or *IIe* auxilliary slot memory card. The bank switched addressing mode shares the language card area and serves you well as a location for running code. Thanks to a low power design, this 1 megabyte configuration draws less than 470mA. Manual included.

BIG BOARD-256K 256K RAM. $224.95
BIG BOARD-512K 512K RAM. $269.95
BIG BOARD-1M 1Meg RAM . . . $299.95

APPLE™ Compatible 5¼" Disk Drive and Controller Card
for Apple II, II+ & *IIe**

• Belt-driven • 143K formatted storage • Color matches Apple Computer • Works with Apple Controller or other Apple-compatible controllers (JE875) • Complete with connector – just plug into your disk controller card • 35 tracks • Size: 6"W x 3½"H x 8-9/16"D • Weight: 4¼ lbs.

ADD-514 (Disk Drive) $129.95
JE875 (Controller Card) $49.95

APPLE™ Compatible 5¼" Half-Ht. Disk Drive
for Apple II, II+ & *IIe**

• Direct drive • 143K formatted • 35 tracks • Super quiet • Works with Apple Controllers or other compatibles (JE875) above • Complete with connector-just plug into your controller • Size: 5¾"W x 1⅝"H x 8"D • Weight: 4 lbs.

ADD-12. . . . $119.95

APPLE™ *IIc* Compatible 5¼" Half-Ht. Disk Drive
• Same specs as ADD-12 (above) except no controller necessary.
ADD-IIc. . . . $129.95

Z-Engine CP/M Interface Card
For Apple II, II+ and *IIe**

Advanced Logic Systems

The Z-Engine is an economical and reliable CP/M interface card that adds the CP/M 80 operating system to your Apple Computer.
• Z-80A microprocessor with CP/M 2.2 operating system and utilities • Follows Apple II Pascal Protocol • Incl. CP/M 2.2 Software • Utilities are menu-driven • Warm-boot without reset • Auto. 80-column board and printer configuration • Manual included
Z-Engine. $139.95

80-Column Card
For Apple II, II+ and *IIe**

The Smarterm II Interface Card for Apple II, II+ and *IIe* provides your video monitor with an 80-column screen display, plus the 40-column Apple II display. Smarterm II understands the standard Applesoft, Integer BASIC, and Apple Pascal commands and programs. Smarterm II also adds special punctuation characters.
Smarterm II. $139.95

NEW! **R&R VHF/Computer Interface**
for Apple II, II+ and *IIe*, *IIc* and Franklin Ace†

An electrically safe, high performance VHF interface to convert a home TV into a full video display for a personal computer, CCTV camera, or sim. systems.
• FCC APPROVED
• Compatible with color or B&W TV's
• Complete with matching video cable, wall transformer, and impedance matching transformers

†*Also compatible with IBM PC and compatibles (with Color Graphics Board).*
SUP'RMOD. . . Suggested List ~~$69.95~~ $19.95

CIRCLE 279 ON READER SERVICE CARD

$20.00 Min. Order - U.S. Funds Only
Calif. Residents Add 6% or 6½% Sales Tax
Shipping - Add 5% plus $1.50 Insurance
Send S.A.S.E. for Quarterly Sales Flyer!

Send $1.00 Postage for your *FREE 1986 Jameco Catalog*
Prices Subject to Change

MasterCard Mail Order Electronics - Worldwide **Jameco ELECTRONICS** VISA®

1355 SHOREWAY ROAD
BELMONT, CALIFORNIA 94002
Phone Orders Welcome (415) 592-8097
Telex No. 176043

8/86

*APPLE, APPLE II, II+, *IIe*, *IIc* and Macintosh are registered trademarks of APPLE Computers

APPLE* Compatible Cards
For Apple II, II+ & *IIe**
Made in U.S.A.!

128K RAM Card
JE868**. . . . $119.95

Applesurance Diagnostic Disk Controller Card
JE877. . . . . $69.95

Parallel Printer Card
JE880. . . . . $59.95

Parallel/Serial 64K Buffer Card
(Attaches to JE880 above)
JE883. . . . . $79.95

16K RAM Card
For Apple II and II+
JE860. . . . . $39.95

Extended 80-Column Card
Apple *IIe*
JE864. . . . . $69.95

**When using CP/M, the JE860 and JE868 will only function with Version 2.20 or earlier; PASCAL (JE868) Version 1.1 or earlier.

The Macintosh Section

PROGRAMMING

BY GARY B. LITTLE

PART III

68000 ASSEMBLY-LANGUAGE PROGRAMMING

This final installment of our series looks at some of the programs that make up the Mac's 68000 Development System and shows how to use them to create a simple application.

In this, the final installment in a three-part series on 68000 programming on the Macintosh, I'm going to look at some of the programs that make up Apple's Macintosh 68000 Development System (MDS). In so doing, I'll show how to use them to create a simple Macintosh application.

The four MDS programs with which every assembly-language programmer must become familiar are

- Edit, an editor for creating your 68000 assembly-language source-code files, linker-control files, and resource-compiler source-code files
- Asm, an assembler for converting your 68000 assembly-language source-code files into object-code modules
- Link, a linker for combining one or more object-code modules into a single application, in accordance with the directions in a linker-control file
- RMaker, a resource compiler for converting source code defining data structures such as menus, windows, and icons into resource modules that you can append to an application

Figure 1 is a flowchart of the usual assembly/linking/compilation procedure. Variations are possible, but I'll be following this basic procedure to develop the sample program defined by the source files in figures 2–4 on the following pages.

The sample program creates a large window on the screen and a menu bar with an apple menu and a File menu. The File menu contains a Quit command you can use to exit from the program and return to the Finder. You can use this program as a shell for testing other programs when all you need is a window in which to display a result.

Edit—the Editor

The MDS editor is called Edit. With it you can create the source files the assembler (figure 2), linker (figure 3), and resource compiler (figure 4) use. If you key in these files, you should call them APlus.Asm, APlus.Link, and APlus.R, respectively.

At this point, it's not important that you understand exactly what these source files do, although the comments in the files should help you in this regard. What is important is to understand how to convert this group of source files into an executable program. Keep reading to find out how!

Asm—the Assembler

The MDS assembler is called Asm. You use it to convert a 68000 assembly-language program from source-code form to a relocatable-object-code form suitable for subsequent processing with the linker. The object-code files the assembler creates have .Rel suffixes (for *relocatable*).

Each line in the source file comprises four fields, each separated from the next by one or more tab characters or blank spaces (see figure 2). These fields are the label field, the instruction field, the operand field, and the comment field.

The Label Field. A label is a sym-

ORGANIZE YOUR COPIES OF A+

Now your magazines can be a handsome addition to your decor, well organized, and easy to find, thanks to these durable library-quality cases or binders. They're made of luxury-look leatherette over high-quality binder board. And both styles are custom-designed for this or any magazine you save, with size, color, and imprint selected by the publisher. FREE transfer foil included for marking dates and volumes.

Magazine binders hold your issues on individual snap-in rods, combining them into one volume. $7.95 each; 3 for $22.50; 6 for $42.95. Mixed titles OK for quantity prices.

Open-back cases store your issues for individual reference. $6.95 each; 3 for $19.75; 6 for $37.50. Mixed titles OK for quantity prices.

CHARGE ORDERS ONLY— for your convenience PHONE 24 HRS.

For Fast Service Call 1-212-503-5319

USE THIS COUPON

A+

P.O. Box 5120, Philadelphia, PA 19141

Please send:
Quantity

_____ Cases
_____ Binders

☐ ENCLOSED IS $_____* Add $1.00 per order for post. & handling. Outside USA add $2.50 per unit ordered. Send U.S. funds only.

☐ CHARGE (Min. $10): ☐ VISA
☐ American Express ☐ Master Charge

Card # _____
Exp. Date _____
Signature _____
Print Name _____
Address _____
City/State/Zip _____
*Residents of PA add 6% sales tax.

bolic name for a position in a program or a piece of data. It must begin with a letter (*A*–*Z* or *a*–*z*), a period (.), or an underscore (_); subsequent characters can also include digits (0–9) and dollar signs. A label's primary function is to provide a symbolic name for a piece of data or for the target address of a branch or jump instruction. The use of labels makes a program listing relatively easy to understand.

A label is a symbolic name for a position in a program or a piece of data.

The Instruction Field. An instruction is either a mnemonic for a 68000 instruction or one of several assembler directives the MDS assembler responds to. See the first installment in this series of articles (June 1986 issue) for the standard names for the 68000 instructions. Assembler directives are commands to the assembler that tell it to perform special chores. The most common are EQU (assign a symbolic name to an expression), DC (allocate space for a constant), and DS (allocate space for a variable).

The Operand Field. This field contains the operand or operands for the instruction or assembler directive in the instruction field. As we saw in last month's installment, operands for instructions indicate the addressing modes the 68000 uses to form effective addresses.

The Comment Field. The comment field begins with a semicolon (;). The assembler ignores the semicolon and everything after it on the line, so you are free to enter any text you want, typically an explanation of what the program is doing. If the entire line is a comment, put a semicolon or an asterisk (*) in the first column.

To run the assembler, double-click on the Asm icon on the desktop. When the assembler takes over, select the name of the file to be assembled, using the Open . . . command from the File menu—that's the file called APlus.Asm in our example.

The assembly process then begins. As it proceeds, the name of the file being acted on is in a box at the top of the screen. When the process ends, a relocatable object-code file called APlus.Rel appears on the same disk as your source file.

Link—the Linker

The next step is to convert the .Rel module created by Asm into an application, using Link. Go from the assembler to the linker by pulling down Asm's Transfer menu and selecting LINK; then select the linker-control file called APlus.Link.

This file controls the activities of the linker, and it must have a filename extension of .Link. The simplest linker-control file contains just two lines and appears in figure 3. The first noncomment line tells the linker to deal with only one relocatable file, Aplus.Rel, and to create an output file called APlus that will contain the final application. The $ following the name of the .Rel file signifies the end

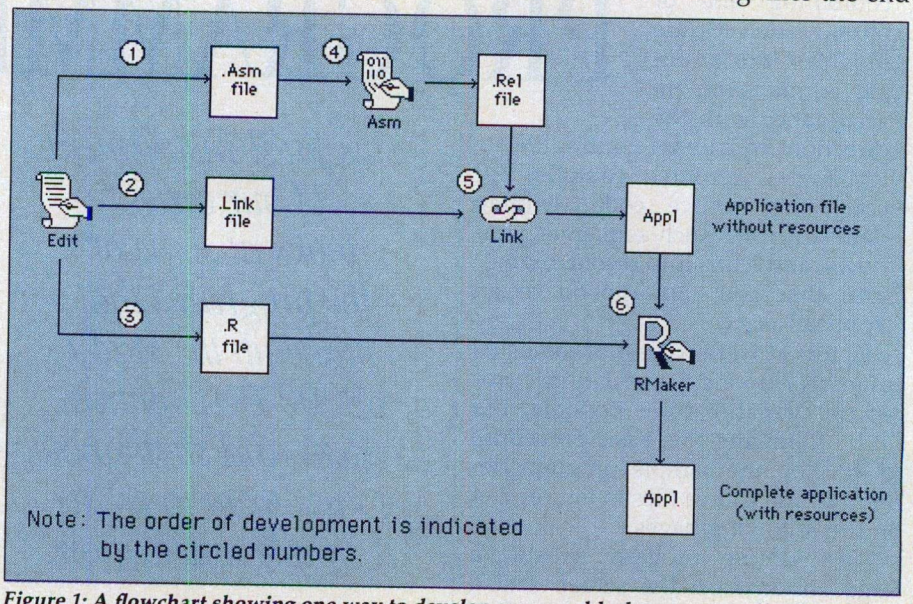


Figure 1: A flowchart showing one way to develop an assembly-language application with MDS

of the linker-control file and is required.

When the linking procedure ends, an application file called APlus will be on the same disk as the .Rel file.

RMaker—the Resource Compiler

At this point, we're still not done, because the sample program makes use of resources for a window and two menus that you haven't added to its file yet. (A resource is a data structure, stored separately from the program code, that defines standard items such as windows, menus, icons, and cursors. Each is associated with a four-character resource ID—such as WIND, MENU, or ICON—and an ID number that is unique within the resource class.) Add them with the resource compiler by selecting the RMAKER command from Link's Transfer menu and then selecting the APlus.R file to work with.

The APlus.R file (see figure 4) tells

Figure 2: The source-code file (APlus.Asm) for Asm

```
* This is a shell for a simple one-window application.
* It does not support desk accessories.

; Symbolic equates:

WindID          EQU             128     ;Window resource ID
 AppleID        EQU             1       ;Menu ID for Apple menu
FileID          EQU             2       ;Menu ID for File menu

; START OF STANDARD HEADER...

        INCLUDE   SysEqu.D              ;Operating system equates
        INCLUDE   ToolEqu.D             ;Toolbox equates
        INCLUDE   QuickEqu.D            ;QuickDraw equates
        INCLUDE   MacTraps.D            ;All trap instructions

; Initialize the various ROM Managers:

        PEA       -4(A5)                ;Start of QuickDraw globals
        _InitGraf                       ;Initialize QuickDraw
        _InitFonts                      ;Font Manager
        _InitWindows                    ;Window Manager
        _InitMenus                      ;Menu Manager
        _TEInit                         ;TextEdit
        MOVE.L    #0,-(SP)              ;(no restart procedure)
        _InitDialogs                    ;Dialog Manager
        _InitCursor                     ;We want "arrow" cursor

        MOVE.L    #$0000FFFF,D0
        _FlushEvents                    ;Get rid of every event

; END OF STANDARD HEADER...

; Create and draw a window on the screen:

        CLR.L     -(SP)                 ;Space for returned pointer
        MOVE      #WindID,-(SP)         ;Resource ID
        MOVE.L    #0,-(SP)              ;0 = store on heap
        MOVE.L    #-1,-(SP)             ;-1 = this is front window
        _GetNewWindow                   ;Get window from resource
file
; The next step is very important. It ensures that our new window
; is the active port so that we can draw in it. The pointer to the
; window is already on the stack.

        _SetPort                        ;Make window the current
GrafPort

; Create two standard menus:

        CLR.L     -(SP)                 ;Space for handle
        MOVE      #AppleID,-(SP)        ;Menu ID number
        _GetRMenu                       ;Get Menu from resource file

        MOVE      #0,-(SP)              ;(0 = add to end)
        _InsertMenu                     ;Add to menu bar

        CLR.L     -(SP)                  ;Space for handle
        MOVE      #FileID,-(SP)         ;Menu ID number
        _GetRMenu                       ;Get menu from resource file

        MOVE      #0,-(SP)              ;(0 = add to end)
        _InsertMenu                     ;Add to menu bar

        _DrawMenuBar                    ;Display menu bar

; Insert your application code here
; (We'll just display a sentence in the window
; in this example.)

        MOVE      #10,-(SP)             ;horizontal position
        MOVE      #40,-(SP)             ;vertical position
        _Move                           ;Position the drawing pen

        PEA       'Visit Expo 86 in Vancouver!'
        _DrawString                     ;Draw the string

GetEvent
        CLR.B     -(SP)                 ;Leave space for boolean result
        MOVE      #$FFFF,-(SP)          ;Allow ALL events
        PEA       EventRecord           ;Results are returned here
        _GetNextEvent                   ;Check for an event
        TST.B     (SP)+                 ;Pop and test the result flag
        BEQ       GetEvent              ;Branch if no pending event

;Note: evtNum and evtMouse are symbols for offsets into EventRecord,
;       and mButDwnEvt and InMenuBar are symbols for numbers.
;      They are defined in the INCLUDEd files.

        MOVE      EventRecord+evtNum,D0 ;Get event type code
        CMP       #mButDwnEvt,D0        ;Is it a button down event?
        BNE       GetEvent              ;No, so branch

        CLR       -(SP)                 ;Space for result
        MOVE.L    EventRecord+evtMouse,-(SP) ;  Where info
        PEA       ClickWindow           ;VAR window involved
        _FindWindow                     ;Where was button pressed?

        MOVE      (SP)+,D0              ;Get result
        CMP       #InMenuBar,D0         ;Pressed in menu bar?
        BNE       GetEvent              ;No, so ignore

; See if "QUIT" was selected from File menu:

        CLR.L     -(SP)                 ;space for result
        PEA       EventRecord+evtMouse  ;Where
        _MenuSelect                     ;Get menu selection
        MOVE      (SP)+,D6              ;Save menu number in D6
        MOVE      (SP)+,D0              ;Discard item number

        MOVE      #0,-(SP)
        _HiliteMenu                     ;Unhighlight menu title

        CMP       #FileID,D6            ;In the FILE menu?
        BNE       GetEvent              ;No, so branch

; must have selected QUIT command:

        RTS                             ;Return to Finder

; The application constants
; ("DCB.B size,value" allocates "size" bytes, each with a value of "value")
; ("DC.L 0" allocates one long word with a value of 0)

EventRecord     DCB.B           EvtBlkSize,0 ;Reserve space for event
record

ClickWindow     DC.L            0       ;Pointer to window where
mouse pressed
```

Figure 3: The linker-control file (APlus.Link) for Link

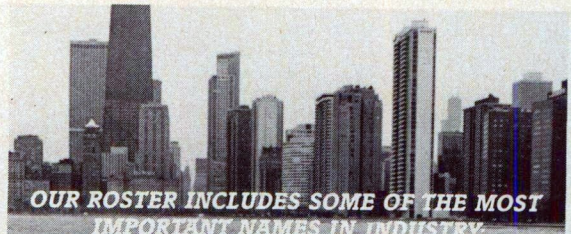
```
; Link this file to create an application (without resources).

APlus.Rel
$
```

Figure 4: The source file (APlus.R) for RMaker

```
* Compile this after assembling and linking APlus.Asm
*
* The next command appends the resources to the application:
!Book:APlus

Type MENU
,1                      ;;Resource ID
\14                     ;;Title is the Apple symbol (\14 = ASCII $14)
About this demo...      ;;About box

,2                      ;;Resource ID
File                    ;;Menu Title
 Quit                   ;;Only item is "Quit"

Type WIND
,128                    ;;Resource ID
APlus Window            ;;Title for Window
40 5 332 502            ;;Window coordinates (TLBR)
Visible NoGoAway        ;;Visible window/ no goaway box
4                       ;;Window ID. 4 = title, no grow box
0                       ;;User-definable item (not used)
```

PC NETWORK THE #1 SOURCE FOR ALL YOUR

MEMBERS PAY WHOLESALE + 8% OR LESS AND GET 14-30 DAY SOFTWARE RENTALS



OUR ROSTER INCLUDES SOME OF THE MOST IMPORTANT NAMES IN INDUSTRY:

AT&T	General Mills
Barclays Bank	General Electric
Bell & Howell	General Motors
Citibank	Hewlett Packard
Columbia University	IBM
Data General	ITT
Exxon	Kodak
Frontier Airlines	Yale University

Plus 150,000 THOUSAND satisfied consulting firms, small businesses, governments, schools and value minded individuals.

CALL TOLL FREE
800-621-SAVE

(Orders—Membership and Advice!)
In Illinois Call (312) 280-0002
Your Membership Validation Number **M586**

You can validate your membership number and, if you wish, place your first money-saving order over the phone by using your VISA, MASTERCARD or AMERICAN EXPRESS. **Our knowledgeable sales consultants are on duty Mon.-Fri. 8:00 AM to 7:00 PM, Sat. 9:00 AM to 5:00 PM CST.**

PERSONAL COMPUTER NETWORK
320 West Ohio Street
Chicago, Illinois 60610

PC NETWORK MEMBERSHIP APPLICATION

YES! Please enroll me as a member in the PC NETWORK™ and send my catalog featuring thousands of computer products, all at just 8% above DEALER WHOLESALE PRICES. I will also receive "THE PRINTOUT", a special quarterly update on merchandise at prices BELOW even those in my wholesale catalog and all the other exclusive, money-saving services available to Members. I am under no obligation to buy anything. My complete satisfaction is guaranteed.

Please (✓) all boxes that apply: **586**

	1 Year	2 Year
•Basic Membership	**$8** ☐	**$15** ☐
With 14 Days Rental		
Business Software Rental Library	$25 ☐ add'l. per year	
Games Software Rental Library	$10 ☐ add'l. per year	
•Special V.I.P Membership	**$15** ☐	**$25** ☐
With 30 Days Rental BOTH Business and Game Software Rental Libraries	$30 ☐ add'l. per year	

☐Bill My Credit Card: ☐VISA ☐MasterCard ☐American Express
Account Number: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Exp. Date _____ (mon. yr.)

☐Check or Money Order Enclosed for $ _____

Name _____

Address _____ Apt. No. ____

City _____ State _____ Zip ____

Telephone ( ) _____

My Computer(s) is: ☐IBM PC ☐IBM XT ☐IBM AT ☐Apple II ☐Macintosh Other _____

Signature _____
(Signature required to validate membership)

Copyright© 1986, PC NETWORK, INC.

Macintosh

512K Enhanced/Mac Plus 400/800 Disk Drive, Keyboard Mouse, Software

PRICES TOO LOW TO PRINT!

THE™ PC+

640K RAM, IBM™ Compatible, 360K Disk Drive, Turbo Speed, "AT" Style Keyboard

$469.00*

15" WIDE

IMAGEWRITER

w/Mac Kit **$475.00***

MICROSOFT

EXCEL
$197.50*

(At Unheard of Prices!!!)

Multiplan, File or Word	97.50*
BASIC	75.00*
Chart	62.00*

DISKETTES

Guaranteed for Life!

Brand name diskettes available in boxes of 10 or in bulk packs of 50

5¼" SS/DD $7.95* Box 10 / Box 50 ea. .47*

3½" SS/DD Box of 10 **$12.50*** Free Flip 'n' File Case

3½ DS/DD Box of 10 **$16.95*** Free Flip 'n' File Case

INFOCOM

$19.75* $19.75* $21.75* $21.75*

Available for Apple II & Mac

APPLE

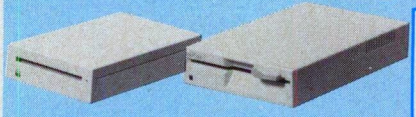
MAC TERMINAL
Mac's Most Popular Communication Package

$77.00*

APPLEWORKS

Most Popular Integrated Package for Apple IIe/IIc Complete Word Proc./Spreadsheet/ Data Base

$160.00*



Apple 800KB Macintosh Drive **$349.95***

PC Network External IIc Drive **$95.00***

Broderbund

Print Shop **$24.75***

Bank Street Writer **$35.25***

HAYDEN

Sargon III

$24.75*

GATO

Apple II **$17.75***

Mac **$22.00***

***PC Network Members pay just 8% above the wholesale price, plus shipping.** All prices reflect a 3% cash discount. Wholesale prices fluctuate rapidly—all prices in this issue have been prepared 60 days in advance. Please call for latest prices. Minimum shipping $2.50 per order. International orders call for shipping & handling charges. Money Orders, personal and company checks please allow 10 working days to clear.

APPLE AND MACINTOSH NEEDS!

OVER 30,000 PRODUCTS AT EVERYDAY LOW, LOW PRICES!

EDUCATIONAL SOFTWARE

(Please add $1 shipping and handling for each title ordered.)

	Wholesale
Bluechip *Baron, Millionaire or Tycoon*	$19.75*
Broderbund *Bank Street Writer*	35.25*
Broderbund *Lode Runner, Choplifter*	17.00*
Broderbund *Print Shop*	24.75*
Davidson & Associates *Speed Reader II*	31.00*
Davidson & Associates *Math Blaster*	22.00*
Davidson & Associates *Word Attack!*	21.50*
Hayden *DaVinci—House/Interiors or Landscapes—Mac Only*	23.00*
Hayden *Sargon III*	24.75*
Infocom *Deadline, Suspended, SeaStalker*	24.00*
Infocom *Enchanter, Planet Fall, CutThroats*	19.75*
Infocom *Zork II, Zork III*	21.50*
Infocom *Zork I, Witness, Hitchhiker's Guide,*	19.75*
Infocom *Suspect, Infidel, Sorcery*	21.75*
▶**Mark of the Unicorn** *Mouse Stampede*	$17.25*
Penguin *Graphics Magician—Mac Only*	28.97*
Penguin *Transylvania—Mac Version Only*	20.00*
Screenplay *Professional Blackjack*	39.88*
Sierra On-Line *Frogger—Mac Too!*	19.50*
Sierra On-Line *Crossfire*	18.00*
Simon & Schuster *Typing Tutor III—Mac Too!*	28.25*
Sir-Tech *Wizardry*	17.25*
Spectrum Holobyte *GATO*	17.75*
▶**Spinnaker** *Alphabet Zoo, Face Maker, Story Machine, Hey Diddle Diddle, Rhymes & Riddles*	15.25*
▶**Spinnaker** *Delta Drawing*	20.75*
Sublogic *Flight Simulator II*	27.25*
Sublogic *Night Mission Pinball*	19.25*
Virtual Combinatics *Micro Cookbook*	17.50*

BUSINESS SOFTWARE

(Please add $2.50 shipping and handling for each title ordered.)

Apple *Apple Works*	$160.00*
Apple *MacTerminal*	77.00*
Arrays *Home Accountant*	35.00*
Arrays *Home Accountant Expanded*	42.00*
Borland *SideKick for Mac*	37.50*
Borland International *Turbo Pascal*	30.00*
BPI *GL, A/P, A/R, P/R, or INV Each Only*	190.00*
Broderbund *Bank Street Writer*	35.25*
Broderbund *Print Shop*	24.75*
Central Point *Copy II Plus*	16.25*
Dow Jones Software *Market Analyzer*	184.50*
Dow Jones Software *Market Manager*	103.50*
Funk Software ***Sideways***	26.50*
HowardSoft *Real Estate Analyzer III*	163.00*
Human Edge *Mind Prober*	22.00*
Human Edge *Management or Sales Edge*	$110.00*
▶**Living Videotext** *ThinkTank—512K Mac*	$85.00*
Microsoft *Excel*	197.50*
▶**Microsoft** *Multiplan (DOS or CP/M)*	97.50*
▶**Microsoft** *For Macintosh: Word, File, Multiplan*	97.50*
Microsoft *Basic for Macintosh*	75.00*
Microsoft *Chart for Macintosh*	62.00*
Monogram *Dollars & Sense*	55.00*
Monogram *Dollars and Sense for Mac Only*	63.00*
Odesta *Helix for Macintosh Reg's 512K*	200.00*
Software Publishing *PFS: File, PFS: Write*	61.00*
Software Publishing *PFS: Graph*	63.50*
T/Maker *Click Art for Macintosh Only*	24.75*
United Software Industries *Ascii Express Pro*	64.75*

HARDWARE

(Please add shipping and handling charges found in italics next to price.)

COMPLETE SYSTEMS

Apple *Apple IIe, Apple IIc, Macintosh*	CALL	
AT&T *6300 PC CPU 2 128K/2 Floppy/1 Serial/1 Parallel*	$1,650.00*	(35.64)
AT&T *7300 Unix PC 10MB Hard Disk/1 Floppy/512K*	3,699.00*	(79.90)
▶**CENTRAL POINT** *Laser 128 Apple II+/Apple IIe Compatible*	355.00*	(7.67)
▶**COMPAQ** *DeskPro w/256K/1 Floppy/10MB Hard Disk*	1,940.00*	(61.11)
COMPAQ *Hard Disk Portable 256K*	CALL	
▶**IBM** *PC Base System with 256K 2DS/DD/FDC*	1,159.00*	(25.00)
▶**IBM** *PC Professional Hard Disk 256K/DS/DD/FDC/20MB Hard Disk*	1,499.00*	(32.38)
IBM *PC/AT Base System 1.2MB Floppy/256K*	2,795.00*	(60.37)

DISK DRIVES & CONTROLLERS

Apple *Macintosh Add On Drive*	$349.95*	(7.50)
Apple *UniDisk 3.5"w/accessorykit*	319.00*	(6.89)
Corvus *6MB Hard Disk*	675.00*	(14.58)
Haba *800KB DS/Mac Drive*	215.00*	(4.64)
IOmega *5MB Macnoulli*	1,250.00*	(27.00)
IOmega *Dual 10MB Macnoulli*	2,150.00*	(46.44)
Micro-Sci *A2 143KB Drive*	150.00*	(5.00)
Micro-Sci *H/H Drive for II+/IIe*	145.00*	(5.00)
Micro-Sci *Floppy Controller*	55.00*	(2.50)
Paradise *10MB Hard Disk Subsystem for Macintosh*	525.00*	(11.34)
Paradise *20MB Hard Disk Subsystem for Macintosh*	745.00*	(16.09)
PC Network *Apple IIc External Drive*	95.00*	(5.00)
▶**PC Network** *Apple IIe Disk Drive*	85.00*	(1.84)
Tecmar *10MB Hard Disk for Mac*	999.00*	(21.58)

MODEMS

Anchor *Lightning 2400*	$309.00*	(2.50)
Anchor *Signalman Express*	205.00*	(5.00)
Hayes *Micromodem IIe/Smartcom*	125.00*	(2.50)
Hayes *Smartmodem 300*	125.00*	(2.50)
Hayes *Smartmodem 1200*	340.00*	(5.00)
Hayes *Smartmodem 2400*	525.00*	(5.00)
MicroCom *Mac Modem 1200*	348.00*	(2.50)
Novation *Apple Cat II*	174.45*	(2.50)
Prometheus *ProModem 1200 with Mac Pac*	247.00*	(6.00)
▶**Prentice** *Pop Com w/MacPac 1200 Baud Modem, Cable, Straightalk*	253.00*	(6.00)
U.S. Robotics *Courier 2400BPS*	215.00*	(2.50)
Zoom *Modem IIe*	345.00*	(5.00)
THE™ MODEMS ARE 100% HAYES COMPATIBLE	95.00*	(2.05)
THE™ 1200 COM External	129.00*	(5.00)
THE™ 2400 COM External	277.00*	(5.00)

MONITORS

Amdek *Video 300G Composite*	$110.00*	(3.00)
Amdek *Video 300A Composite*	120.00*	(3.00)
Amdek *Color 300*	215.00*	(3.00)
Amdek *Color 600 RGB*	365.00*	(3.00)
Apple *NEW! Super Color IIe*	255.00*	(2.55)
Apple *Color Monitor IIc*	259.00*	(2.55)
Princeton *HX-9 9" RGB Monitor*	365.00*	(3.00)
Princeton *HX-12 RGB Monitor*	387.50*	(8.36)
Taxan *620-U High Res Color*	382.00*	(3.00)
Zenith *ZVM 1230A NEW! 12" High Res Green/Non Glare*	81.00*	(2.50)

BOARDS AND BUFFERS

AST Research *Multi I/O-2*	$155.00*	(2.50)
Microtek *Dumpling/GX*	55.00*	(2.50)
Orange Micro *Grappler +*	66.00*	(2.50)
Orange Micro *Serial Grappler*	66.00*	(2.50)
PC Network *Z80 Card*	35.00*	(2.50)
Quadram *Multicore 1 Parallel, 1 Serial, Clock, Expandable to 256K*	140.00*	(2.50)
Quadram *MP-8K Microfazer Buffer (Expandable)*	110.00*	(2.50)
Quadram *APIC/G GraphicsInterface*	62.00*	(2.50)
Quadram *eRAM-80COL w/64K*	88.00*	(2.50)
Street Electronics *ECHO II Speech Synthesizer*	85.00*	(2.50)
Titan Technologies *Accelerator IIe*	207.35*	(2.50)
Video 7 *Apple IIc RGB Adapter*	70.00*	(2.50)

PRINTERS

Apple *15" Imagewriter w/Mac kit*	$475.00*	(10.26)
Apple *Imagewriter II 80COL/200CPS NLQ Color*	419.95*	(9.07)
Apple *LaserWriter*	4,895.00*	(75.00)
▶**Citizen** *MSP-10 160CPS/80COL*	225.00*	(4.90)
▶**Citizen** *MSP-15 160CPS/132COL*	315.00*	(7.34)
Citizen *Premiere 35 35 CPS Daisywheel 132COL/Fric + Trac*	360.00*	(8.32)
Epson *LX-80 100CPS/80COL*	199.00*	(4.30)
Epson *FX-85 160CPS/80COL*	335.00*	(7.24)
Epson *FX-286 200CPS/132COL*	485.00*	(10.48)
▶**Epson** *LQ-1000 180CPS/60CPS NLQ*	CALL	
Epson *SQ-1000 Inkjet Printer 160CPS LQ Model/176CPS Draft/132COL*	1,359.00*	(29.35)
Epson *DX-35 Daisywheel Printer 35CPS/132COL/True Letter Quality*	590.00*	(12.74)
NEC *2030 20CPS Letter Quality*	605.00*	(13.00)
NEC *3530 33CPS Letter Quality*	690.00*	(14.90)
NEC *8810 55CPS Printer*	999.00*	(21.58)
▶**Okidata** *ML-182 NEW! 120/CPS LQ Model/Fric*	188.00*	(4.06)
▶**Okidata** *Color 20 80CPS/100 LQ Model/Epson Graphics (Requires Interface)*	109.00*	(2.35)
▶**Okidata** *ML-192 Sleek Design 160 CPS LQ Model/Fric/IBM Graphics*	299.00*	(6.46)
Okidata *ML-193P 132COL/160CPS*	425.00*	(9.18)
Quadram *Multicolor Quadjet w/kit*	396.00*	(8.55)
Toshiba *P341 132COL/216CPS*	699.00*	(15.10)
Toshiba *P351 132COL/288CPS*	926.00*	(20.00)

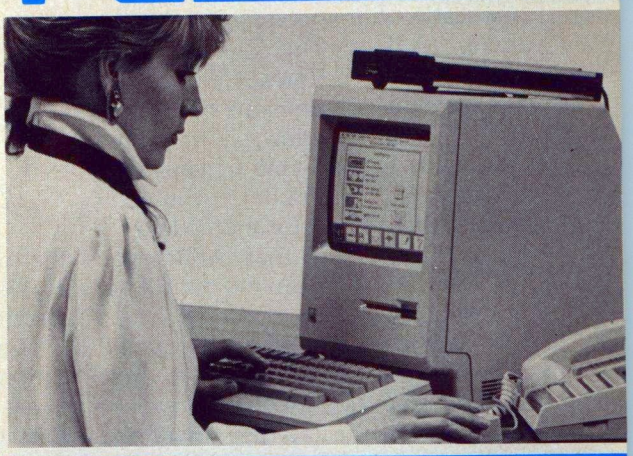
ACCESSORIES

Apple *Macintosh Carrying Case*	$69.00*	(1.49)
▶**Assimilation Process** *MacTurbo*	73.50*	(2.50)
▶**3.5" Macintosh Diskettes w/Free Flip 'n' File**		
SS/DD (Box of 10)	12.50*	(1.00)
DS/DD (Box of 10)	16.95*	(1.00)
Chalkboard *PowerPad*	62.00*	(1.50)
Hayes *Mach II Joystick for IIe*	25.00*	(1.50)
Hayes *Mach III Joystick w/Fire Button*	26.50*	(1.50)
Kensington *Microwave Fan*	56.97*	(1.50)
Koala *KoalaPad Touch Tablet*	78.00*	(1.50)
Curtis *Ruby Surge Protector*	39.00*	(1.50)
PC Network *Cooling Fan with Surge Protector & Dual Outlets*	25.00*	(1.50)
Sony *Mac Diskettes (Box of 10)*	19.00*	(1.50)
Thunderware *Optical Digitizer No Costly Camera Equipment Needed!!*	155.00*	(2.50)
WP Printer Paper *2600 Perfed Sheets*	17.00*	(1.50)

Mac Too! Indicates the Mac version is available at the same price.

CIRCLE 315 ON READER SERVICE CARD

PC NETWORK



NEW! PC NETWORK

ONLINE

A 24 Hour Bulletin Board and Information Service Center

- FREE SOFTWARE: Over 20,000 downloadable shareware titles.
- NEWS FLASHES AND REVIEWS: Tie into the worlds largest computer News Network .Get all the latest on Apple,™ IBM,™ Mac, Unix and related subjects.
- PLACE ORDERS, LEAVE MESSAGES FOR TECHNICAL SUPPORT—DAY OR NIGHT.
- LATEST PRICING: and Special Sales on PC Network Products.

PC Network improves on the benefits its members continue to enjoy...

- WHOLESALE + 8% PRICING.
- 10 DAY RETURN ON HARDWARE
- 600 PAGE NETWORK CATALOG
- QUARTERLY NEWSLETTER
- 14-30 DAY SOFTWARE RENTAL
- FREE TECHNICAL SUPPORT

30 Day Money Back Guarantee on Membership

TOLL FREE (800) 621-SAVE

In Illinois (312) 280-0002 Validation Code M586

Customer Service and Order Status (312) 280-1567

the resource compiler to append the menu and window resources to the application file you created with the linker (APlus). The RMaker command you use is !Book:APlus, where the word *Book* is the name of the disk on which the APlus file is stored (change it to the name of your data disk before you compile). If you don't specify the disk prefix and RMaker is on a different disk than APlus, you will see a Can't create the output file! error message.

If you're like most people, you'll probably use MDS with a two-drive system. Your assembler tools will be on a disk in the internal drive, and your source code and compiled files will be on a disk in the external drive. If you use this standard setup, you must specify a disk prefix in the RMaker Append command; otherwise, RMaker will look for the file to append to on the internal disk, and it won't be there.

The name of the output file must be the first noncomment and nonblank line in an RMaker source file. (Comment lines begin with an asterisk.) The line that follows must either be blank or contain an eight-character string defining the file-type code and the creator code. It's blank in this example because you're appending the resources to an existing file.

Use symbolic names instead of absolute numbers, so that your programs will be easier to understand.

When RMaker finishes, the application contains all the resources it needs to operate, so you're done. Return to the Finder by selecting the Quit command from the File menu and then double-click on the APlus icon to run the application. When you do this, you'll see a large window entitled APlus Window covering most of the screen. To leave the application, select the Quit command from its File menu.

RMaker TYPE Statements

The bulk of an RMaker source file, like the one in figure 4, comprises several "TYPE" statements that define the data in the resources. The format of a TYPE statement is as follows:

```
TYPE XXXX              ;;XXXX=resource
                       ;; type code
[name],ID [(aa)]       ;;resource name,
                       ;; ID, attribute
data for resource      ;;the resource
                       ;;data goes here
```

The brackets enclose optional parameters (don't include them in your file!), which means you don't have to assign a name to a resource and you don't have to specify the value of the resource's attribute byte (but you do have to specify a resource ID). Comments follow two successive semicolons and are ignored by RMaker.

The data for the resource is specific to the type of resource you're defining, as you can see by looking at the definitions for the WIND and MENU resources in figure 4. You can define multiple resources of the same type with a single TYPE command. You follow the data statements in a resource definition with a blank line and begin the next resource definition with the "name, ID, attribute" line, which is how the two MENU resources are defined in figure 4.

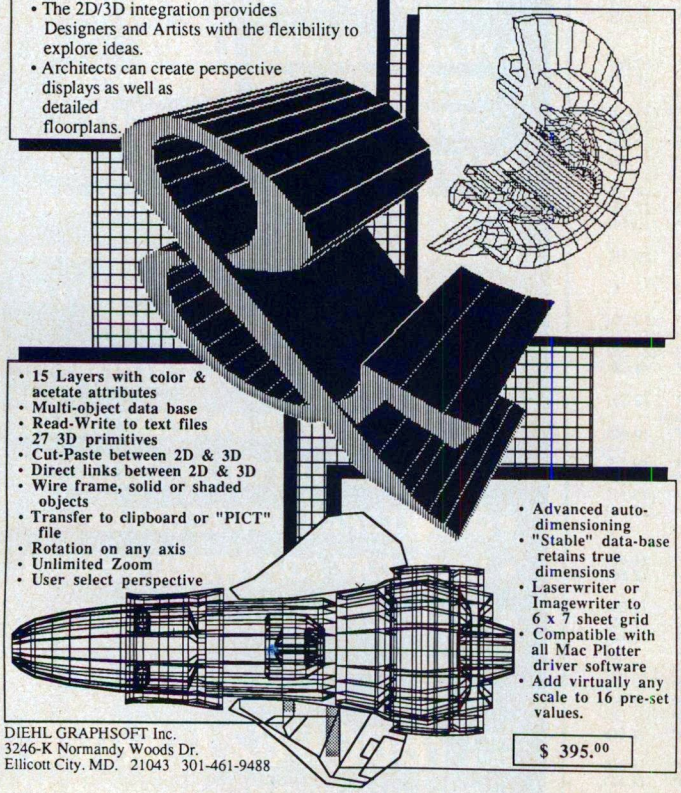
Equate and Trap Definition Files

MDS comes with several definition files containing standard symbolic names for various items that are

MINICAD™ offers two fully integrated CAD systems, 2D drafting & 3D surface modeling in ultra-high precision.

- Engineers appreciate Minicad's 9 decimal precision.
- The 2D/3D integration provides Designers and Artists with the flexibility to explore ideas.
- Architects can create perspective displays as well as detailed floorplans.

MiniCad™
Computer Aided Design
by
Diehl Graphsoft Inc.



- 15 Layers with color & acetate attributes
- Multi-object data base
- Read-Write to text files
- 27 3D primitives
- Cut-Paste between 2D & 3D
- Direct links between 2D & 3D
- Wire frame, solid or shaded objects
- Transfer to clipboard or "PICT" file
- Rotation on any axis
- Unlimited Zoom
- User select perspective

- Advanced auto-dimensioning
- "Stable" data-base retains true dimensions
- Laserwriter or Imagewriter to 6 x 7 sheet grid
- Compatible with all Mac Plotter driver software
- Add virtually any scale to 16 pre-set values.

$ 395.00

DIEHL GRAPHSOFT Inc.
3246-K Normandy Woods Dr.
Ellicott City. MD. 21043 301-461-9488

CIRCLE 331 ON READER SERVICE CARD

Peace of Mind

Echo's BRAND NEW protection scheme for the Mac is simply unbeatable.

Hard Disk Install with or without a KEY DISK is now a reality, with no danger of additional copies or user problems.

Used by the Best Names in Software!!

And Priced at 35¢ a copy!

SOFTWARE DUPLICATION

Nobody Does it Faster!!!

We promise AND DELIVER high quality & fast turn-around on every order! Full packaging available. Custom labels & sleeves ready in only two weeks!

CALL : 800-533-4188 or 215-363-2400 in PA

ECHO DATA SERVICES, INC.
Marsh Creek Corp Center
Lionville, Pennsylvania 19353

CIRCLE 123 ON READER SERVICE CARD

often used in assembly-language programs: addresses of system global variables, offsets into data structures, bit flags, data masks, and other numeric quantities. It also has files defining the standard toolbox and operating-system instructions for accessing the subroutines in the Macintosh ROM. You should always use symbolic names in your own programs instead of absolute numbers or addresses, so that the programs will be easier to understand and debug.

To assemble the predefined symbol-definition files with your application source code, use INCLUDE directives in your source file, as shown in figure 2. You should make a point of always including these files at the beginning of every program you write, so that they're always there when you need them.

The names of the symbol-definition files you will use most often are SysEqu.D, ToolEqu.D, QuickEqu.D, and MacTraps.D. The comments for the INCLUDE directives in figure 2 indicate what these files contain.

ROM Subroutines

The Macintosh ROM contains hundreds of subroutines that make up a user-interface toolbox. You can use them to easily perform standard activities such as displaying windows, pulling down menus, and dragging windows around the screen.

You access these ROM subroutines by using trap instructions defined in the MacTraps.D file. By convention, their names begin with an underscore character for easy identification. Some subroutines from the program in figure 2 are __GetNewWindow, __GetRMenu, __InsertMenu, and __GetNextEvent.

Parameters the subroutines in the Macintosh ROM require are usually passed via the 68000 stack. The results, if any, are put onto the stack. (Some subroutines use registers instead, but we won't be dealing with them here.)

For example, consider the __GetNewWindow subroutine used in figure 2. This subroutine pulls the definition for a window from a resource file (the resource type is WIND) and then displays the window on the screen. It requires three parameters: the resource ID for the WIND resource, a pointer to a storage area in memory it can use, and a pointer to the window behind which it will be drawn on the screen. __GetNewWindow returns one re-

AZTEC C

The C for the Macintosh and Apple II

FOR THE MACINTOSH

AZTEC C68k is the most powerful, portable, and professional C compiler and software development system for the Apple Macintosh. It is available in three configurations.

AZTEC C68k-c (Commercial System) $499

For serious Macintosh developers who want to program in C there is no parallel to AZTEC C68k-c. AZTEC C68k-c produces smaller and faster code in less time than any system benchmarked. The supporting utilities and commands of AZTEC C68k-c create a Macintosh development environment with the power and flexibility needed for producing professional results.

All C features are faithfully supported providing portability with UNIX C and AZTEC C compilers available for the APPLE II, MS DOS, PC DOS, CP/M-86, CP/M-80, TRSDOS, and C64.

Features include: C compiler, 68000 Macro Assembler, modular programming, overlay linker, debuggers, mouse based editor, Z(Vi) editor, SHELL development environment (UNIX was developed to support software development - this environment incorporates the best of UNIX), comprehensive support of the Macintosh including the toolbox to provide straight forward development of Macintosh programs and desk accessories, make, diff, grep, terminal emulator (source), grow (source), desk accessory (source), ramdisk (source), UNIX I/O, MATH, UTILITY, and MACINTOSH run time libraries (source), full support for 512k Mac and Lisa Macworks, 600+ page manual, resource maker, calling C routines from PASCAL, PASCAL from C, and assembler subroutines, no-royalty license.

Manx support includes one year of computer tracked updates and technical telephone support.

AZTEC C68k-d (Developer's System) $299

AZTEC C68k-d provides a less expensive development system for programmers on limited budgets. AZTEC C68k-d includes C compiler, 68000 Macro Assembler, Linker, debuggers, editor, toolbox support, run time libraries (object), sample programs (source), and a 600 page manual.

AZTEC C68k-p (Personal System) $199

For students and professionals doing serious non-commercial work. Includes C compiler, Linker, run time libraries, sample programs (source), debugger, and editor. Restricted license.

C-TREE Database (Aztec object format) $149

C-TREE Database (Object + Source) $390

FOR THE APPLE II

AZTEC C65/DEV (Developer's System) $299

This C compiler and software development system comes with C compiler, 6502 assembler, SHELL, overlay linker, UNIX I/O, Screen, and Graphics libraries, editor, utilities, and support for ProDos.

AZTEC C65 . . . . . $199

C compiler, 6502 assembler, Linker, libraries, Apple DOS 3.3 support.

AZTEC C65 Personal . . . . . $ 99

C compiler and development system. Restricted license.

MANX

TO ORDER OR FOR INFORMATION CALL OR WRITE:

MANX SOFTWARE SYSTEMS
Box 55 · Shrewsbury, NJ 07701
TX 4995812

CALL:
800-221-0440
201-530-7997 (NJ)

TECH SUPPORT - 201-530-6557

CP/M-80 and CP/M-86 are trademarks of DRI Macintosh and PRO DOS are trademarks of Apple
TRS DOS is a trademark of Tandy UNIX is a trademark of ATT

CIRCLE 189 ON READER SERVICE CARD

COVER UP

Macintosh Plus
Cover Ups Available Now

COVER UPS: Contemporary dust covers made of first quality 400 denier rip stop nylon. **COVER UPS** are water resistant and anti-static. They will not tear, crack or create lint problems as do many vinyl and cloth covers. All seams and hems are double stitched for that finished look. **COVER UPS** will outlast the useful life of your computer, insuring years of worry free protection. We specialize in dust covers for Apple products and update our product line frequently. *Don't hesitate to protect your new Apple!* Individual covers available for most components, plus specially designed one piece covers for larger sets, such as the Apple II's, IBM PC's, and COMPAQ's. Available in six attractive colors: **Bone** (similar to the Mac), **Blue, Brown, Rust, Smoke** (gun metal grey), and **Tan.**

Macintosh/Mac Plus Sets *(Specify)* — **Prices**

#M1B	Macintosh, Keyboard, and Mouse	$19.95
#M1	Macintosh, Keyboard, Imagewriter[1], and Mouse	$27.95
#M2	Macintosh, Keyboard, Imagewriter[1], External Drive (400/800K), and Mouse	$29.95
#M5	Macintosh, Keyboard, Large Imagewriter, and Mouse	$29.95

Apple IIc Sets

#C1	Apple IIc CPU, Monitor[2], and Mouse *(Separate covers)*	$18.95
#C2	Apple IIc CPU, Monitor[2], External Disk Drive, and Mouse	$24.95
#C3	Apple IIc CPU, Monitor[2], Imagewriter[1], External Disk Drive, and Mouse	$29.95
#C4	Apple IIc CPU, Monitor[2], Scribe, External Disk Drive, and Mouse	$29.95

Apple IIe Sets

#E1	Monitor[3] atop IIe CPU *(One piece cover. Components available)*	$23.95
#E11	E1 with Imagewriter[1] *(Two covers)*	$31.95
#E2	Monitor[3] atop Profile DuoDisk atop IIe CPU, *(One piece cover. Components available)*	$26.95
#E21	E2 with Imagewriter[1] *(Two covers)*	$34.95

[1] - Substitute **Imagewriter II** for Imagewriter. Any set add $1.00.
Substitute **Laserwriter** for Imagewriter. Any set add $5.00.
[2] - Substitute IIc **Color Monitor** for Green Monitor. Any IIc set add $1.00.
[3] - Substitute IIe **Color Monitor** for Monitor II. Any IIe set add $1.00.

Other **COVER UP** *Sets Available Including IBM and Compaq.*

STAND-UPS: Universal printer stands designed to raise your printer for easy viewing and provide ample space below for paper storage. Our **STAND-UPS** are metal with a textured powder coat finish (same as your printer), and include molded rubber booties to protect your printer and desk top. Available in black or computer white. **STAND-UPS** are truly the first reasonably priced printer stands. Retail Value $23.95 ..... *Direct Order* $18.95

SLIP-UPS: Our own special mouse pad. Help keep your mouse clean and rolling easy. Two sizes and four colors to choose from: Blue, Brown, Bone, and Red.

Lil Slip-Up — 6" × 8" Pad *(Complete screen coverage and more* - Pictured above) ..... *Only* $ 4.95
Big Slip-Up — 8" × 9½" Pad *(Room to spare)* ..... *Only* $ 7.95

Imagewriter Ribbons *(First Quality. Satisfaction Guaranteed)*

Black: ..... $4.50/ribbon ..... Box of six *Only* $21.95/$3.66 ea.
Colored: (Mix or match) ..... $6.00/ribbon ..... Box of six *Only* $26.95/$4.50 ea.
Available in six colors: Red, Blue, Green, Brown, Yellow, and Purple.

Scribe Ribbons

Black: ..... $6.00/ribbon ..... Box of six *Only* $26.95/$4.50 ea.

◄ **PAK-UPS:** Now you can take it with you — your diskettes that is. Designed to conveniently hold 2, 4, 6, or 8 diskettes (3½"). (5¼" **PAK-UPS** available soon.) **PAK-UPS** are a lightweight convenience carrier for your diskettes that will easily fit in your briefcase or vest pocket. Velcro closure holds your diskettes safe and secure. Available in eight colors: Black, Brown, Blue, Bone, Green, Red, Smoke, and Tan.

Retail Value $11.95 .... Direct Order $9.95 or 2/$16.95

ORDERING: Phone or mail order. We accept Visa & M/C.
SHIPPING: Continental U.S. UPS Ground $3.00, 2nd Day Air $4.00.
SCHOOLS: Purchase Orders Accepted.

★ **SPECIAL: FREE SLIP-UP** *with the purchase of any* **COVER-UP** *set.* ★
For a limited time only when you purchase direct.

Computer Cover Co.
P.O. Box 3080, Laguna Hills, CA 92654
CA (714) 380-0085 - Others (800) 235-5330

Macintosh/Mac Plus, Apple IIc, Apple IIe, Mac XL are all registered trademarks of Apple Computer.

CIRCLE 136 ON READER SERVICE CARD

sult: a pointer to the window definition in memory.

Before calling __GetNewWindow, you must configure the stack properly. Since it returns a result, you must first reserve stack space for the result with a CLR.L –(SP) instruction. (You use the .L form because the result, a pointer, is a long word. You can allocate space for a word result with a CLR –(SP) instruction, and space for a Boolean (true/false) result with a CLR.B –(SP) instruction.)

You must then push the values of __GetNewWindow's three parameters onto the stack: first the resource ID (a word), then the storage pointer (a long word), and finally the window pointer (another long word).

The order and size of the parameters is critical. To determine this information for a given trap instruction, you must refer to *Inside Macintosh* or a similar reference work. If you don't arrange things properly, you will invariably see the Macintosh's infamous bomb box.

The Standard Program Header

Notice that the first part of the sample program contains a sequence of instructions for initializing various groups of ROM subroutines (called managers) that the program uses. (In the sample program, you've actually initialized managers you don't use so you can use the same header with any program.) It also removes any pending input/output (I/O) operations from the event buffer and turns on the standard arrow cursor.

You should insert a similar header at the beginning of every application program you write for the Macintosh. If you don't do so, the program will fail when you try to use a manager that has not been initialized.

Wrap-Up

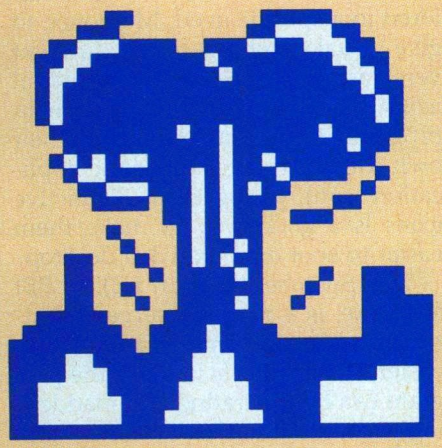
By now you should be reasonably familiar with how to create a Macintosh application in assembly language. I don't have the space to analyze many 68000 instructions or ROM subroutines in detail, but you can easily obtain more information by referring to any of the several books (including my own!) now available on how to program the Macintosh. I presented a list of these books in the June installment. ✚

This article was adapted from chapter 2 of Gary Little's most recent book, Macintosh Assembly Language: A Guide for Programmers, *which will be in bookstores this fall.*

Customizing YOUR ELECTRONIC WORKPLACE

SOFTWARE *BY ROBERT C. ECKHARDT*

Several small programs that can make a big difference to your Mac

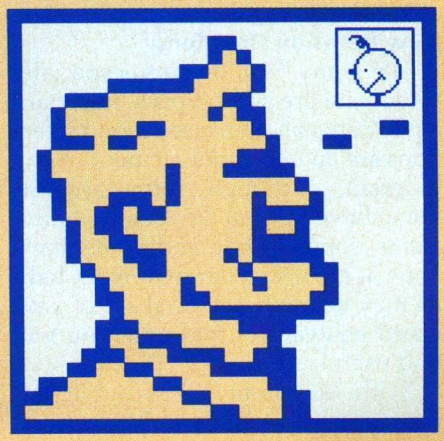


With its desk accessories stacked neatly in the corner and its files organized (or disorganized) just like your real-world desktop, the Macintosh offers the most comfortable and intuitive working environment around. Even so, all of us have ideas about how to make our Mac even easier to work with. From changing menus to creating new icons, several utility programs give you the power to act on your ideas, turning your Mac into a truly personal computer.

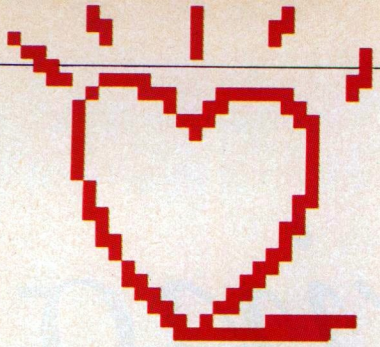
Font and Desk-Accessory Help

Although Apple's Font/DA Mover is a handly little item, it has many limitations. For example, perhaps you have the public-domain desk accessory Extras but wish that it had a more meaningful name, or maybe you have two desk accessories with almost identical names. Font/DA Mover can't help you, but with DA Installer (Version 1.5) from Dreams of the Phoenix, you can rename any currently installed desk accessory (see figure 1). Unfortunately, for normal day-to-day operations (installing and deleting), DA Installer is seriously flawed: It installs all the desk accessories, not just the one you want, in a desk-accessory file. Thus, unless you store your desk-accessory collection with only one accessory per file, you'll have to continue using Font/DA Mover as well.

Fonts are by their nature more complex beasts than desk accessories, and Font Librarian from Proper Software is a versatile program that does a remarkably good job of taming them. The first thing you notice about Font Librarian is that you can open many more than two font files at the same time. Thus, you can do a lot of font swapping among many different destinations without constantly having to open and close files. The next thing that distinguishes Font Librarian is that you can rename a font or give it a new ID number, which are useful functions if you run into conflicts while you are installing a new font. And then there's Font Librarian's Display Font command. With it, you can display a font in paragraph form or as an ASCII chart, in plain, italic, bold, underline, shadow, out-



ICONS BY JOHN HERSEY



line, extended, or condensed form.

The most important feature of Font Librarian, however, is its ability to install fonts in applications as well as in System and font files—especially useful if you use a single System file with more than one application, whether you use just two on a floppy disk or two dozen on a hard disk. For example, say you have MacWrite and MacPaint on one disk and that you like to use many picture and display fonts with MacPaint and a large number of text fonts with MacWrite. With Font Librarian, you can pare the System file down to the fonts used in both programs and insert application-specific fonts into individual programs as appropriate (see figure 2). This scheme eliminates the clutter of unwanted fonts in each application. In addition, assuming you have enough disk space (a hard disk is helpful here), the total number of fonts at your disposal can greatly exceed the number that the System file alone can hold.

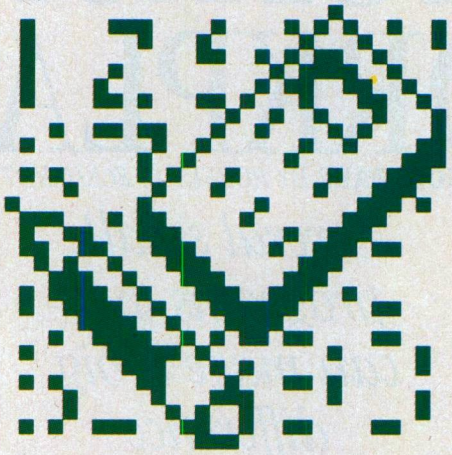
Once all your desk accessories and fonts are installed, the public-domain program Sort Menu can put them in order. Sort Menu is helpful because font and desk-accessory menus are not arranged alphabetically but in the order in which your fonts or desk accessories were installed. After you click on Sort Menu, your menus will be arranged alphabetically (until you turn off or reset your Mac). If you set Sort Menu as your start-up application, your fonts and desk accessories will be organized for you automatically each time you turn on your Mac.

New Items on the Menu

For many Mac owners, especially those who are good typists, keyboard equivalents of often-used menu selections are an important element of any program. Although some applications have logical keyboard equivalents, some do not, and others have none at all; also, your own work habits may demand a special set of keyboard equivalents that only you will find useful.

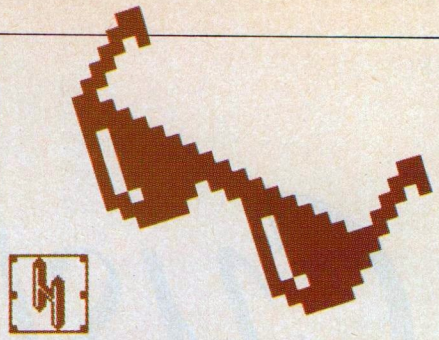
With MenuEdit 1.0, a public-domain program, you can add keyboard equivalents of your own choosing to almost any program. MenuEdit is not, however, entirely free of bugs, and some programs do not take kindly to the changes that MenuEdit makes. So some caution is in order, the major warnings being: *Never* use MenuEdit on your only copy, or the original copy, of a program; *Always* experiment on an expendable copy, and, if you are successful, use the changed copy as your new working copy—*do not* change the original. These rules apply, of course, to any situation in which you actually alter the inner workings of a program.

MenuEdit's main window has three sections: the left section lists menu titles (with the apple-menu symbol replaced by an @ sign), the middle section lists the commands under the currently selected menu; and the right section provides the



tools for changing the commands. To set a keyboard equivalent for MacPaint's Rotate command (see figure 3), for example, you select the Edit menu in the left section and the Rotate command in the middle section; then you press the key you want as a keyboard equivalent in the ⌘ Key box. To preserve your change, you select Save from the File menu. Also, always be sure to check that your new ⌘-key combination isn't already in use elsewhere in the program. Having one keyboard command linked to two different menu commands is not just confusing, but it may also cause the program to crash.

You can also edit menus with Apple's resource editor, REdit, Version 1.0. (Do not confuse REdit and ResEdit, another Apple resource editor with similar capabilities that is, however, more difficult for nonprogrammers to use.) Upon opening REdit and the application to be worked on, you will see several rows of icons.



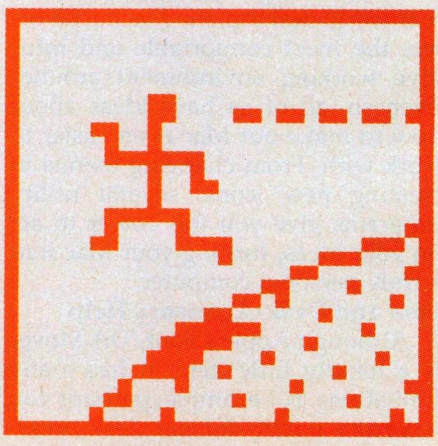
The relevant one in this case is labeled, not surprisingly, MENU. Double-click on that icon, and a new window opens with a series of menu icons representing the selected program's menus (see figure 4).

To eliminate MacPaint's Align Right keyboard command, for example, you first select menu 7 in the MENU window. Doing so opens a sample Style menu on the right and a dialog box on the left (see figure 5). Click on Align Right in the menu and delete the R in the ⌘ Key box on the left. As with MenuEdit, be sure to save your changes before quitting.

A New Look for Your Desktop

With the techniques described above, you can customize most applications to suit almost any taste. For example, you can make several different versions of MacPaint, each tailored to a specific need. Moreover, to give visual emphasis to the different versions, you can give them special icons. Since many public-domain programs do not have an icon of their own (they display the generic application icon), giving them distinctive icons is a good way to make them easier to spot on a crowded desktop.

Icon Switcher (Version 1.2), by PBI Software, is a partially successful attempt to make icon manipulation easier. I say *partially* because the program can be frustrating and maddeningly counterintuitive at times, and the manual is a serious contender for the worst-manual-ever prize. None-

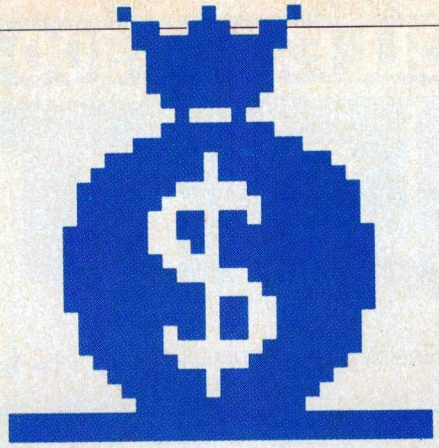


theless, the program is usually easier to use than a resource editor such as REdit.

Regardless of how you do it, however, altering icons is risky business. For most of us, playing with icons is rather like wearing knee boots while fishing in neck-deep water—you'd best stay in the shallows, unless you're willing to risk a dunking. So be careful, and don't be surprised if something unexpected happens.

If you want to use Icon Switcher to add an icon to an application, you can borrow an icon from another program, use one of the many public-domain icons, or select an icon from one of PBI Software's Icon Libraries. You should note, however, that although the Icon Library disks are creative, they are not very cost-effective—the Fun and Games Series 1 disk, for example, contains only 102 icons, although it has enough space for almost eight times as many.

The process of installing a new icon is not difficult. Once you have started Icon Switcher and selected the program you want to work on, you will see two items, Icons and File Icons, on the menu bar. The former refers to special icons, such as Bill Atkinson's portrait in MacPaint. The latter, which refers to icons that appear on the desktop, contains the commands you need to work with application or document icons.



To install a new icon, you first use the Switch command to move the new icon into your application (see figure 6). Next, you select the Manipulate command. If the application program has never had an icon before, you simply click on the Install button (see figure 7). If the program already has an application icon, replacing it with a new one requires an additional step to make sure that the new one "sticks." After selecting Manipulate, but before installing the new icon, you must locate the old icon in the icon-display window and delete it. Your new icon should now appear on the desktop—if not, you use the Switch command to replace the old icon in the Desktop file with the new one.

If you want to alter an existing application icon, you can use Icon Switcher's Edit window. REdit's icon-editing window is, however, much more hospitable. To access file icons in REdit, you simply double-click on the ICN# icon in REdit's main window and double-click on the generic icons in the ICN# window until you find the icon you're looking for. You make your changes the same way you would with the pencil in MacPaint's FatBits (see figure 8), and be sure to save your work before you quit REdit. If necessary, you can switch the icon in the Desktop file. If you want to create new icons from scratch, then REdit is the best program to use—simply click on the Clear button to erase the old icon and push on. If, on the other hand, you want to convert a MacPaint picture into an icon, then you use Icon Switcher.

You can also replace or modify document icons, such as MacPaint's

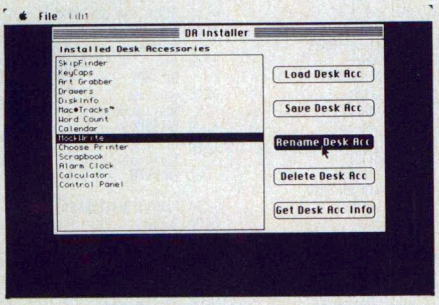


Figure 1: With DA Installer, you can give a new name to any desk accessory installed in the current System file. You can also install and delete accessories and get information such as the amount of disk space an accessory uses.

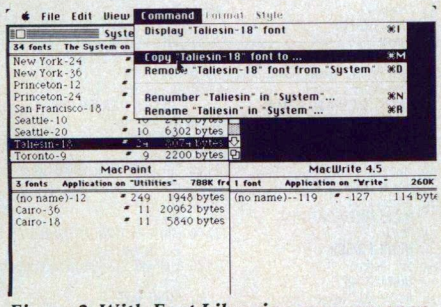


Figure 2: With Font Librarian, you can open many font files at once, including those within application programs. It also has menu commands that summarize your instructions so far—an effective way of preventing mistakes.

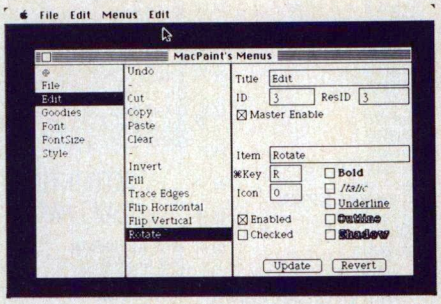


Figure 3: To add a keyboard equivalent with MenuEdit, you first select a menu from the list on the left and then a command from the center list. Click on the box on the right labeled ⌘ Key and type the desired letter in uppercase.

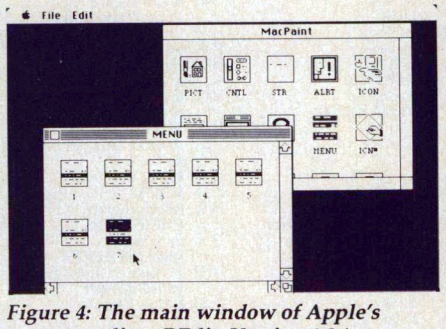


Figure 4: The main window of Apple's resource editor, REdit, Version 1.0 (upper right) lists a program's resources graphically. Numbered icons represent the menus in MacPaint in the Menu window (lower left), with Menu 1 the leftmost.

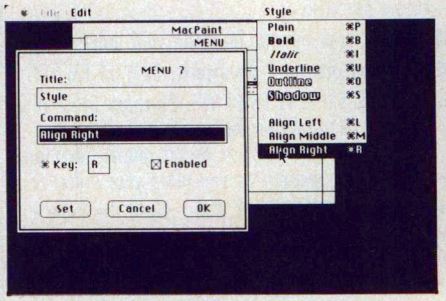


Figure 5: To use REdit's menu-editing window, you click on the command in the sample menu and then work in the Edit window. If you want to edit a second command in the same menu, you press Return.

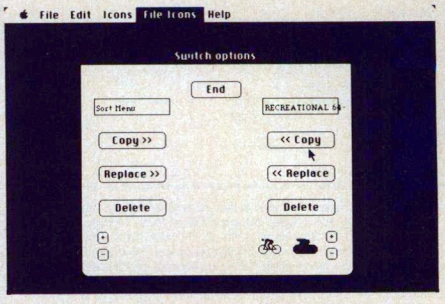


Figure 6: The first step in giving Sort Menu an icon is to copy one from an icon file to Sort Menu. You can flip through the icons in the file by clicking on + or – until you find the one you want; to move it to Sort Menu, you click on <<Copy.

CALL TOLL FREE 1-800-382-2242

NORTHEAST Software

7 Trap Falls Rd. Shelton, Connecticut 06484 (See Below)

WE WILL BEAT

- Tap our unmatched selection and inventory of software/hardware for the Mac and Apple (as well as the IBM PC and Commodore Amiga).
- School and corporate purchase orders are welcomed. CALL 1-800-874-1108.
- Special/rush orders. If something you need is not listed, hard to find, or needed in a hurry, CALL 1-800-874-1108.
- Order Status. CALL (203) 375-3860.
- Ask for System Sales when ordering a complete system.
- FREQUENT PURCHASER PROGRAM. Any repeat customer will automatically receive $1 off any order he or she places with us. Please mention to your operator that you are a repeat customer. We value your continuing business. Send in $1,000 worth of invoices (representing previous purchases) and you will receive a coupon worth 1% off any future purchase. With $5,000 worth of invoices, receive a coupon worth 5% off any future purchase.
- No additional charges for credit card orders.
- Convenient hours. 7 days/week: 9AM–11 PM EST.
- FREE AIR EXPRESS SHIPPING. Purchase $150 or more of software and for no additional charge we will ship your products by air courier. Mention this to your operator as you place your order.
- FURTHER DISCOUNTS BY MAIL. Circle the items in our ad you want, send the aid in with the coupon below and receive $ .50 off each item! Cut out a competitor's ad with a lower price and we will give you $1 off his price (subject to the conditions below).

Send coupon and list of items desired to:
MasterCard VISA
DISCOUNT BY MAIL DEPARTMENT
Northeastern Software, 88 Ryders Lane, Stratford, CT 06497

To be eligible for the $1.00 per item discount you must:
1. Fill out all items. 2. Send in our ad with the items you desire circled.

Name_____

Address_____
(Include Company Name)

City_____ State_____ Zip_____

Phone No. at above address_____

Check form of payment
Visa MasterCard C.O.D. Personal Check
Certified Check Money Order

Card No._____ Exp. Date_____

Computer Model _____

Personal and company checks allow 3 weeks to clear. For faster delivery, send cashier's check, certified check, or money order. Shipping—Software ($3.00 minimum). Shipping—Hardware (please call 203-375-3860). COD—Add an addition $2.00. Alaska, Hawaii, Canada, PO, APO, and FPO $5.00 minumum. Foreign orders—$15.00 minimum and 15% of all orders over $100. Mastercard and Visa (please include card no. and expiration date). Connecticut residents add 7.5% sales tax. Prices subject to change without notice. All returns must have a return authorization number. Call 203-375-3860 to obtain one before returning goods for replacement. Defective merchandise replaced with same item only. We do not guarantee compatibility. All sales are final. "Comparable advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees. The $1 off offer only applies to items where Northeastern's price is not already the lowest. Final judgment remains with the manager on duty.

SPECIALS

Copy II Mac	17.50
Excel	221.00
Flight Simulator	31.50
Full Paint	51.00
Gato	24.00
The Graphics Magician	45.00
Haba 800K Drive	240.00
Harrier Strike Mission	24.00
Imagewriter Ribbons	4.25
Mac Golf	34.00
Mac Lightning	57.50
Microsoft Word	108.00
Quick and Dirty Vol 2	24.00
Ready Set Go	99.00
Sidekick with Phone Link	49.00
System Saver	61.00
Thinktank 512K	95.00
Thunderscan (New Version)	166.00
True Basic W/3-D Graphics	95.00
Turbo Charger	35.00
Wizardry I	33.00

DESK ACCESSORY PROGRAMS

AFFINITY MICROSYSTEMS	
Tempo	56.00
BATTERIES INCLUDED	
Battery Pack	26.50
BORLAND	
Sidekick with Phone Link	49.00
DREAMS OF THE PHOENIX	
Day Keeper Calendar	24.00
Twelve-C Financial Desktop	24.00
DUBL-CLICK SOFTWARE	
Calculator Const. Set	58.50
ELECTRONIC ARTS	
Custom Calc Set	33.50
ENTERSET	
Quick Set	25.00
Quick Paint	25.00
MAINSTAY	
Type Now	25.75
HARVARD ASSOCIATES	
Desk Toppers	28.50
SILICON BEACH SOFTWARE	
Accessory Pack 1	20.00
VIDEX	
Mac Calendar	48.50

GRAPHICS SOFTWARE

ALTSYS	
Fontographer	232.00
Fontastic	23.50
ANN ARBOR SOFTWARE	
Advanced Animation Toolkit I	40.50
Animation Toolkit II	85.00
Animation Toolkit I	29.00
In otion	82.00
Full Paint	51.00
APPLE COMPUTER	
Mac Draw	CJALL
AXLON	
Card Shoppe	35.00
Art Portfolio	34.00
Art Portfolio II	48.00
BRODERBUND	
Printshop	JCALL
CASSADY COMPANY	
Fluent Fonts	28.00
Fluent Laser Fonts	CALL
CENTURY SOFTWARE	
Laser Font Potomac	18.40
Laser Font Willamette	18.50
Ultrafonts	18.50
Ultrafonts/Technical & Business	30.50
Technical & Business Fonts	18.50
DIABLO VALLEY DESIGN	
Mac Grid	24.50
CHALLENGER SOFTWARE	
Mac 3D	112.50
CRICKET SOFTWARE	
Cricket Graph	128.00
DIVERSION INC	
Jumbo Color Pens	13.00
Underware Pens	9.00
Underware Ribbon	9.00
DRUID	
Classic Fonts	24.50
Graphic Letters	24.50
ENABLING TECHNOLOGIES	
Easy 3D	55.00
ENTERSET	
Quick Paint	25.00
HAYDEN SOFTWARE	
DaVinci Commercial Interiors	112.00
DaVinci Interiors	26.50
DaVinci Houses	26.50
Video Works	54.00
DaVinci Building Blocks	44.00
DaVinci Landscapes	26.50
Home Design	44.00
Art Grabber W/Body Shop	27.50
INNOVATIVE DATA DESIGN	
Mac Draft	135.00
Paste Ease	28.50
KENSINGTON	
Professional Type Fonts-Headln	39.00
Graphic Accents	28.00
Professional Type Fonts-Text	28.00
MAGNUM SOFTWARE	
Slide Show Magician	31.00
Mc Pic Volume 1	26.00
Mc Pic Volume 2	26.00
MANHATTAN GRAPHICS	
Ready Set Go	99.00
MESA GRAPHICS	
Plot It	66.00
MICRO MAPS	
Mac Atlas World	49.00
Mac Atlas USA	49.00
MICROSPOT	
Mac Plot	125.00
SUMMAGRAPHICS	
Mac Tablet 9x6	240.00
Mac Tablet 12x12	328.00
SUNCOM INC	
Mactant 1	17.00
T MAKER	
Click Art Publications	27.00
Click Art Effects	27.00
Click Art Letters	27.00
Click Art Personal Graphics	27.00

ACCOUNTING SOFTWARE

ARRAYS/CONTINENTAL	
Home Accountant	CALL
CHANG LABS	
Rags to Riches GL	94.00
Rags to Riches AP	94.00
Rags to Riches AR	94.00
Rags to Riches Inventory	94.00
DIGITAL ETC.	
Mac Accountant	75.00
INTERMATRIX	
Chequebook	25.00
MONOGRAM	
Dollars & Sense	79.00
Forecast	37.50
PALANTIR	
Accounts Receivable-Palantir	68.00
Accounts Payable-Palantir	68.00
Inventory Control-Palantir	68.00
General Ledger-Palantir	68.00
PEACHTREE	
Accounts Payable-Peachtree	81.00
General Ledger-Peachtree	81.00
Accounts Receivable-Peachtree	81.00
SIERRA INFO SYSTEMS	
Accountants Choice Each	CALL
Mac One Write	133.00
Mac One Write Payroll	133.00
SOFTSYNC	
Personal Accountant	47.150
STATE OF THE ART	
Electric Checkbook	38.00
SIMON AND SCHUSTER	
J.K. Lassers Money Manager	45.00
UNITED SOFTWARE	
In House Accountant	109.00

BUSINESS SOFTWARE

ADVANCED LOGIC SYSTEMS	
Mighty Mac	31.00
AEGIS	
Zap! Invoice	53.00
Housekeeper The	31.00
ALLEGRO SOFTWARE	
Multiplan Templates-Busnrs Anal	28.50
Multiplan Templates-Pers Finan	28.50
Softstart	28.50
APPLE COMPUTER	
Mac Project	CALL
APPLIED LOGIC SYSTEMS	
Mac Math Pac	260.00
APROPOS	
Financial Planning	35.00
Investment Planning	35.00
Tax Planner	24.00
ARTSCI	
Softforms	22.50
Magic File	57.00
ASSIMILATION PROCESS	
Business Essentials	CALL
Mac Spell Right	CALL
Right Word The	CALL
BLYTH SOFTWARE	
Omnis III	238.00
BOSTON SOFTWARE	
Mac Publisher II	CALL
BRAINPOWER	
Stat View	95.00
Stat View 512	185.00
CHANG LABS	
Three Pack	227.00
BRAINSTORM	
Overture	CALL
COMPUTER APPLICATION INC.	
II in a Mac	51.50
CREIGHTON SOFTWARE	
Mac Office	27.50
Mac Spell +	49.00
Mac Home	25.00
CRICKET SOFTWARE	
Cricket Graph	133.00
CRYSTAL CANYON	
Mac Librarian	28.00
DATAFOOD	
Drawforms	28.00
Mac Forms	38.00
DATALOGICA	
dMAC III	CALL
DATAPACK SOFTWARE	
Executive Office	205.00
My Office	73.00
DOW JONES SOFTWARE	
Spreadsheet Link	60.00
Straight Talk	47.00
Dow Jones Membership Kit	17.00
Market Manager +	108.00
DREAMS OF THE PHOENIX	
Quick and Dirty Utilities 1	24.00
Quick and Dirty Utilities 2	24.00
ELECTRONIC ARTS	
Financial Cookbook	30.00
EMERGING TECHNOLOGIES	
Macoffix	78.00
ENTERSET	
Quick Word	30.00
FORETHOUGHT	
Factfinder	80.00
Filemaker	98.00
HABA SYSTEMS	
Quartet	120.00
Haba Wills	28.50
Haba Business Forms	28.50
Haba Business Letters	28.50
HARRIS TECHNICAL SYSTEMS	
Profit Projection/Breakeven An	46.00
HAYDEN SOFTWARE	
I Know Its Here Somewhere	32.00
Ensemble	55.00
Hayden Speller	42.00
Hayden Chart	58.50
HAYES MICROCOMPUTING	
Please	122.00
HEYDEN & SON.	
Stat Works	73.00
HOWARD SOFT	
Howard Tax Preparer	CALL
HUMAN EDGE SOFTWARE	
Mind Prober	26.00
LAZER SOFTWARE	
Lazerbase	58.50
LAYERED	
Front Desk	72.00
LIGHTYEAR	
Lightyear	CALL
LIVING VIDEOTEXT	
Think Tank 128K	49.00
Think Tank 512K	95.00
LOTUS DEVELOPMENT	
Jazz	CALL
MACNIFTY	
Studio Session	67.75
MAINSTAY	
Turbo Download	24.75
MAIN STREET SOFTWARE	
Main Street Writer	48.00
Main Street Filer	48.00
MEACOM	
Mac + II	68.50
MEGAHAUS	
Megafiler	90.00
Megamerge	60.00
Megaform	145.00
MEGAMAX, INC	
Megamax C Compiler	173.50
MESA GRAPHICS	
Tekalike	150.00
MICRO PLANNING SOFTWARE	
Micro Planner	CALL
Micro Planner Plus	CALL
MICROSOFT	
Excel	222.50
Chart	70.75
Multiplan	105.00
File	108.00
Typographer	108.00
Word	108.00
NEW CANNAN MICRO	
Mac Disk Catalog	25.00
Mac Disk Catalog II	30.00
NOLO LEGAL SOFTWARE	
Will Writer	23.00
ODESTA	
Helix	210.00
ODS INC.	
Consultant	108.50
Sales Consultant	CALL
PALADIN	
Crunch	77.00
Supercrunch	163.00
PALANTIR	
In Touch	73.00
PROVUE DEVELOPMENT	
Overvue	140.00
PROTEKT-IT SOFTWARE	
Procopy/Proedit	26.00
REAL DATA	
Residential Real Estate	58.50
Financial Analysts	58.50
Tax Shelter Syndication Analyst	167.00
Real Estate Investment Analysis	87.00
Mortgage Qualifier	117.00
Property Management I	173.00
On Schedule	117.00
Commercial Industrial App.	58.00
SATORI SOFTWARE	
Bulk Mailer	66.00
SIMON & SCHUSTER	
Construction Estimator	41.00
SMITH MICRO	
Market Link	49.00
Stock Portfolio System	135.00
SOFT DESIGN	
Timebase	79.00
SOFTSTYLE	
Decision Map	72.00
SOFTECH MICROSYSTEMS	
Mail Manager	38.00
SOFTVIEW	
Macintax 85	43.00
SOFTWARE PUBLISHING	
PFS File/Report Combo	93.00
PFS Report	69.00
PFS File	69.00
SOUTHEASTERN SOFTWARE	
Mac Transfer	28.00
STATSOFT	
Data Fast	38.50
STONEWARE	
DB Master Mac	102.00
SUPEREX	
Mac Notes	36.00
TELOS	
Filevision	189.00
WARNER	
Desk Organizer	53.00

Connecticut Orders Call (203) 929-8522 IN CANADA 1-800-843-0074

ASTERN

ANY COMPARABLE ADVERTISED PRICE BY $1

LANGUAGES

APPLE COMPUTER
Mac Pascal ... CALL
MacIntosh 68000 Development ... CALL
CONSULAIR
Mac C W/Tool Kit ... 258.00
CREATIVE SOLUTIONS
Mac Forth Level I ... 70.00
EXPERTELLIGENCE
Exper Lisp ... 234.00
Exper Ops 5 ... 155.00
Exper Logo ... 74.00
HIPPOPOTAMUS
Hippo-C Upgrade Kit ... 133.00
Hippo C Level I ... 71.00
Hippo C Level II ... 189.00
KRIYA SYSTEMS INC
Neon ... 117.00
MAINSTAY
Macasm ... 74.00
MANX
Aztec C68K-C ... 345.00
MICRO ANALYST
Mac Zap ... 29.00
MICROMOTION
Masterforth ... 88.00
MICROSOFT
Basic-Microsoft ... 84.00
Fortran Compiler-Microsoft ... 168.00
Logo-Microsoft ... 73.00
SOFTWORKS LIMITED
Softworks C Compiler ... 234.00

BOOKS

MICROSOFT PRESS
Mac Work Mac Play ... 12.50
Macinations-Microsoft ... 12.50
Apple MacIntosh Book ... 12.50
Inside Macpaint ... 12.50
Presentation Graphics ... 12.50
Lotus Guide to Jazz ... 12.50
Printed Word The ... 12.50
MacIntosh Software Book of ... 12.50
Multiplan Book-Microsoft ... 12.50
Inside Macproject ... 12.50
Macwork Multiplan ... 12.50

EDUCATIONAL SOFTWARE

ADDISON WESLEY
Smart Eyes ... 34.00
ATI
How to Use Multiplan ... 38.00
Mac Coach ... 38.00
Teach Yourself Excel ... 38.00
Teach Yourself Jazz ... 38.00
BRAINPOWER
Powermath ... 50.00
Chipwits ... 25.00
Thinkfast ... 20.00
CADME
Nutricalc ... 47.00
DAVIDSON AND ASSOCIATES
Spell It ... 26.75
Word Attack ... 26.75
Math Blaster ... 25.00
Speed Reader II ... 35.00
FIRST BYTE
Smooth Talker ... 47.00
Kidtalk ... 38.00
Speller Bee ... 38.00
FORETHOUGHT
Typing Intrigue ... 28.00
FORTNUM SOFTWARE
Mac Chemistry ... 88.00
GREATWAVE SOFTWARE
Concertware + ... 35.00
HARVARD ASSOCIATES
Mac Manager ... 35.00
HAYDEN SOFTWARE
Music Works ... 44.00
Turbo Turtle ... 34.00
HIPPOPOTAMUS SOFTWARE
Hippo Computer Almanac ... 17.50
MARK OF THE UNICORN
Professional Composer ... 234.00
MICROSOFT
Entrepreneur ... 28.50
Learning Multiplan & Chart ... 36.00
PALANTIR
Mac Type ... 24.00
Word Play ... 25.00
Math Flash ... 25.00
QUEUE INTELLECTUAL SOFTWARE
Starting a New Business ... 43.00
RUBICON PUBLISHING
Song Painter ... CALL
Deja Vu-Rubicon ... 21.75
SCARBOROUGH
Mastertype ... 22.00
Run for the Money ... 12.00
Make Millions ... 28.00
SIMON & SCHUSTER
Mac Art Department ... 23.00
Typing Tutor III ... 30.50
Paper Airplane Construction SE ... 22.50
SPECTRUM HOLOBYTE
Tellstar Astronomy Program ... 25.00
Tellstar Astronomy Level II ... 40.00
SPRINGBOARD
Art a la Mac People + Places ... 21.00
Art a la Mac Variety Pack ... 21.00
TERRAPIN
Mac Logo ... 63.00
THINK EDUCATIONAL
Mac Edge II ... 25.00
Mind Over Mac ... 25.00
Mac Edge + ... 25.00
TIMEWORKS
Evelyn Wood Dynamic Reader ... 34.00

ENTERTAINMENT

ACTIVISION
Alter Ego-Male ... 34.00
Mindshadow ... 23.00
Borrowed Time ... 25.00
Championship Star Baseball ... 19.00
AEGIS
Pyramid of Peril ... 21.00
Mac Challenger ... 20.00
Red Flag ... 21.00
ANN ARBOR SOFTWARE
Grid Wars ... 21.00
Lunar Explorer ... 29.00
AXLON
Mac Match ... 29.00
BLUE CHIP SOFTWARE
Squire ... 27.00
Baron ... 27.00
Tycoon ... 27.00
Millionaire ... 27.00
BRAINPOWER
Torpedo Run ... 27.00
BRODERBUND
Cyborg ... 22.50
Ancient Art of War ... 25.50
Lode Runner ... 22.50
CBS SOFTWARE
Murder By The Dozen ... 15.00
CHALLENGER SOFTWARE
Legacy ... 26.00
CREIGHTON DEVELOPMENT
Mac Command ... 17.00
ELECTRONIC ARTS
Pinball Construction Set ... 25.00
Deluxe Music Construction Set ... 30.00
One on One ... 25.00
Skyfox ... CALL
EPYX
Rogue ... 22.50
Temple of Apshai Trilogy ... 22.50
Winter Games ... 22.50
EXPERT SYSTEMS
Mac Gammon ... 15.50
GENERAL COMPUTER COMPANY
Ground Zero ... 23.50
HAYDEN SOFTWARE
Word Challenge II ... 22.50
Sargon III ... 26.00
Perplex ... 22.50
Masterpieces ... 22.50
Holy Grail ... 28.00
Computer Novel Construction SE ... 28.00
HENDERSON ASSOCIATES
Real Poker ... 18.00
HIPPOPOTAMUS SOFTWARE
Hippo Jokes & Quotes ... 17.00
INFOCOM
A Mind Forever Voyaging ... 25.00
Cutthroats ... 22.00
Deadline ... 27.00
Enchanter ... 22.00
Hitchhikers Guide to the Galaxy ... 22.00
Infidel ... 25.00
Planetfall ... 22.00
Seastalker ... 22.00
Sorcerer ... 25.00
Spellbreaker ... 27.00
Starcross ... 27.00
Suspect ... 25.00
Suspended ... 25.00
Wishbringer ... 22.00
Witness ... 22.00
Zork I ... 22.00
Zork II ... 25.00
Zork III ... 25.00
KASTEL TECHNOLOGY
Trivia Savant ... 22.00
MAGNUM SOFTWARE
Gypsy ... 22.75
MARK OF THE UNICORN
Mouse Stampede ... 19.50
MILES COMPUTING
Mac Wars ... 25.00
Mac Attack ... 25.00
Fusillade ... 19.50
Overlords ... 30.00
Harrier Strike Mission ... 25.00
MINDSCAPE
James Bond A View to a Kill ... 22.00
Rambo ... 22.00
Balance of Power ... 28.00
Brataccus ... 28.00
Ractor ... 24.50
Deja Vu-Mindscape ... 28.00
Stephen Kings The Mist ... 22.00
Goldfinger ... 22.00
Dick Francis-High Stakes ... 22.00
MIRAGE CONCEPTS
Trivia ... 11.50
NEWSOFT
New Gammon ... 18.50
ORIGIN SYSTEMS
Ultima III ... 36.00
PBI SOFTWARE
Fokker Triplane ... 34.00
Strategic Conquest ... 28.50
Feathers & Space ... 20.75
PENGUIN
Crimson Crown ... 22.50
Graphics Magician ... 44.50
Pensate ... 22.50
Transylvania ... 22.50
Xyphus ... 22.50
Quest ... 22.50
PRACTICAL COMPUTER APPLICATIONS
Mac Golf ... 33.00
PROFESSIONAL SOFTWARE
Trivia Fever Volume II ... 12.00
Super Sports Trivia ... 15.00
Trivia Fever ... 20.00
PSION
Psion Chess ... 30.50
PRYORITY SOFTWARE
Forbidden Quest ... 19.00
Gateway ... 24.00
SIERRA ON LINE
Ultima II ... 33.50
Frogger ... 21.50
Championship Boxing ... 21.50
SILICON BEACH SOFTWARE
Enchanted Scepters ... 20.00
Airborne ... 18.00
SIR TECH
Wizardry I ... 32.00
SOFT LIFE
Mac Slots ... 25.00
SPECTRUM HOLOBYTE
Gato ... 24.50
Orbiter ... 25.00
STRATEGIC SIMULATIONS
Gemstone Warrior ... 19.50
Computer Baseball ... 21.00
SYNAPSE
Brimstone ... 25.00
Essex ... 25.00
Mindwheel ... 25.00
TELARIM
Dragon World ... 25.00
Amazon ... 25.00
Fahrenheit 451 ... 25.00
Rendezvous with Rama ... 25.00
UNICORN SOFTWARE
Futuria ... 23.00
Utopia ... 23.00
VIDEX
Mac Checkers & Reversi ... 17.200
Mac Vegas ... 32.00
Funpak ... 21.00
Mac Gammon & Cribbage ... 26.00

ACCESSORIES

AMERICAN TOURISTER
Mac Carrying Case-Amer Tourist ... 53.00
APPLE COMPUTER
Mac Security Kit ... CALL
ASSIMILATION PROCESS
Mac Numeric Turbo ... CALL
Mac Port Adaptor ... CALL
Mac Turbo Touch ... CALL
Mac Daisy Wheel Connection ... CALL
Mac Epson Connection ... CALL
AST RESEARCH
Ramstack 1.5 MB ... 995.00
Ramstack 512K ... 550.00
Ramstack 2 MB ... 1575.00
Ramstack 1 MB ... 795.00
AUTOMATION FACILITIES
Micro Clean ... CALL
Floppyclean Refill ... CALL
Floppyclean 3½ ... CALL
CRT Work Station Kit ... CALL
Printer Keyboard Kit ... CALL
CREIGHTON DEVELOPMENT
Proprint W/Cable ... 51.00
Proprint ... 37.00
Proprint W/Ab Switch & 2 Cable ... 134.00
CURTIS MANUFACTURING
Ruby Surge Suppressor ... 43.00
Emerald Surge Suppressor ... 30.00
Sapphire Surge Suppressor ... 24.00
DIVERSIONS INC.
Underware Color Ribbon ... 8.50
Underware Jumbo Pens ... 13.00
Underware Colorpens ... 8.50
Underware Colorpack ... 15.00
Uhderware Black Ribbons ... 8.50
ENVIRONMENTAL SOFTWARE
Mac Cover Complete-Environment ... 12.00
Dust Cover Laserwriter-Mac Att ... 12.50
Dust Cover Keypad-Mac Attire ... 5.00
Dust Cover Printer 15-Mac Atti ... 9.50
Dust Cover Disk Drive-Environm ... 5.00
Dust Cover Printer 10-Mac Atti ... 9.00
ERGOTRON
Mac Tilt ... 62.00
Mac Buffer 256K ... CALL
Mac Buffer 512K ... CALL
Mac Buffer 1024K ... CALL
GTCO CORPORATION
Macintizer ... 435.00
HABA SYSTEMS
Haba Window Dialer ... 19.00
HANZON CORPORATION
Hanzon Board & Cable ... 75.00
INNOVATIVE CONCEPTS
Flip N File II/Micro ... 15.00
Flip N File I/Micro ... 7.00
INNOVATIVE TECHNOLOGIES
Easel The ... 11.00
Pocket ... 8.25
I/O DESIGN
Mac Carrying Case-I/O ... CALL
Imagewriter Carrying Case-I/O ... 36.50
KALMAR DESIGNS
Microcabinet-Double ... 20.00
Microcabinet ... 12.00
KENSINGTON
Swivel/Tilt-Kensington ... 21.00
Swivel-Kensington ... 19.50
Disk Case-Kensington ... 18.50
Dust Cover Printer 15-Kensingt ... 7.50
Starter Pack-Kensington ... 51.00
Dust Cover Disk Drive-Kensingt ... 6.00
Control Center-Kensington ... 57.00
Printer Stand ... 15.75
Polarizing Filter ... 30.50
A/B Box-Kensington ... 58.50
Surge Suppressor-Kensington ... 31.50
Disk Drive Cleaning Kit ... 18.00
Dust Cover-Kensington ... 8.00
Dust Cover Printer 10-Kensingt ... 8.00
Mouse Cleaning Kit W/Pocket ... 14.90
Mouse Pocket ... 6.00
KETTE GROUP
Macnifty ABCD Port Switch ... 31.50
Macnifty Stereo Music System ... 54.00
Macnifty A/B Switch ... 21.50
KOALA TECHNOLOGIES
Mac Vision ... 167.00
Kat ... 131.00
KRAFT
Quick Stick ... 44.00
MACADAM PUBLISHING
Windoware Phone Book ... 29.95
Windoware Calendar ... 29.95
MAGNUM SOFTWARE
Mouse Mover ... 12.00
MEGAHAUS
Megadesk ... 58.75
MICRORAIN
Mac Station II ... 69.00
MICROSOFT
Mac Enhancer ... 152.00
MJ ELECTRIC
Mac Guard ... 54.50
MPH COMPUTERS
Mac Be Cool ... 96.00
NEW IMAGE TECHNOLOGIES
Magic Digitizer ... 275.00
OPTIMUM
Mac Tote ... 59.00
PRACTICAL COMPUTER APPLICATIONS
Mac Backup ... 47.00
SOUTH BAY SYSTEMS
Mouse Pad ... 9.00
SUPEREX
Mac Speak ... 14.00
T MAKER
Click On Worksheet ... 45.50
THUNDERWARE
Thunderscan ... 166.00
VIDEO 7
Mouse Stick ... 35.50

BLANK DISKS

BASF 3½ SS/DD ... 10.00
BASF 3½ DS/DD ... 14.00
Verbatim 3½ SS/DD ... 20.50
Elephant 3½ SS/DD ... 18.50
Fuji 3½ SS/DD ... 17.50
Maxell 3½ SS/DD ... 16.50
Memorex 3½ SS/DD ... 20.00
Sony 3½ SS/DD ... 15.00
Sony 3½ DS/DD ... 26.00

COMMUNICATION SOFTWARE

APPLE COMPUTER
Mac Terminal ... CALL
COMPUSERVE
Compuserve Starter Kit ... 18.00
DATAVIZ
Mac Link ... 58.00
Mac Link W/Cable ... 90.00
DILITHIUM PRESS
PC to Mac & Back ... 75.75
DOW JONES SOFTWARE
Straight Talk ... 57.00
DREAMS OF THE PHOENIX
Mouse Exchange BBS ... 24.00
Mouse Exchange Terminal ... 24.00
HAYES MICROCOMPUTING
Smartcom II ... 83.00
MAINSTAY
Telescape ... 74.00
Palantir ... 2.00
In Touch ... 73.00
SOURCE ON LINE
Source On-Line Info Network ... 22.00
VIDEX
Mail Center for Six ... 265.00
Mail Center for Two ... 168.00
AEGIS
Mac Mail Apple Talk ... 34.00
Mac Mail Telecom ... 34.00
HABA SYSTEMS
Haba Dialer ... 19.00
Haba Dailer/Window Dialer ... 42.00
Haba Com ... 42.00
INTERMATRIX
Phone Link ... 16.00
SOUTHEASTERN SOFTWARE
Mac Transfer ... 28.00

MODEMS

APPLE COMPUTER
Apple Personal Modem 300/1200 ... CALL
COMPUCABLE
Cable Mac to Hayes ... 15.50
HAYES MICROCOMPUTING
Interbridge ... CALL
Smartmodem 1200 ... 355.00
Smartmodem 2400 ... 570.00
Smartmodem 300 ... 128.00
Transet ... 255.00
Transet 1000 512K ... 265.00
Transet/Mac Acc. Kit ... 27.00
KENSINGTON
Portable Modem 300 Baud ... 85.00
MICROCOM
Mac Modem 2400 W/Software ... 553.00
Mac Modem 1200 W/Software ... 385.00
NOVATION
Cat Comm Communication System ... 274.00
Novation 2400 Baud ... CALL
PRENTICE
Popcom X 100 ... 253.00
PROMETHEUS
Promodem 1200 W/Mac Software ... 318.00
US ROBOTICS
Courier 2400 ... 380.00
Password 1200 ... 195.00

PRINTERS

APPLE COMPUTER
Laserwriter ... CALL
Imagewriter ... CALL
Imagewriter 15 ... CALL
Imagewriter II 32K Buffer ... 77.00
Imagewriter II Cut Sheet Feed ... 160.00
BROTHER
Hr 35 ... CALL
HR 25 ... CALL
HR 15 XL ... 317.00
EPSON
AP-80 ... CALL
DX 10 ... CALL
LX 80 ... 205.00
LX 90 ... CALL
DX 20 ... CALL
LQ 800 ... CALL
LQ 1000 ... CALL
LQ 1500 ... CALL
SQ 2000 ... CALL
JUKI
6100S ... 375.00
5510S ... 449.00
6300S ... 639.00
NEC
Elf 360 ... 376.00
OKIDATA
193S Mac/Lisa ... CALL
192S Mac/Lisa ... CALL
TOSHIBA
351 ... 1020.00
1340 ... 390.00
351 Tractor ... 150.00

DISK DRIVES

APPLE COMPUTER
Macintosh Hard Disk 20MB ... CALL
Mac 512K ... CALL
Mac +/1 Meg ... CALL
Mac External 800K Drive-Apple ... CALL
CORVUS
5.5 MB Mac Omnidrive ... 979.00
Omni Talk ... 275.00
45.1 MB Mac Omnidrive ... 3399.00
11.1 MB Mac Omnidrive ... 1379.00
21.6 MB Mac Omnidrive ... 1959.00
HABA SYSTEMS
Haba Disk 800KB ... 240.00
IOMEGA
5 MB Cartridge-Iomega ... 38.00
Head Cleaning Kit-Bernoulli ... 56.75
Bernoullil Box 5MG ... 1290.00

CIRCLE 330 ON READER SERVICE CARD

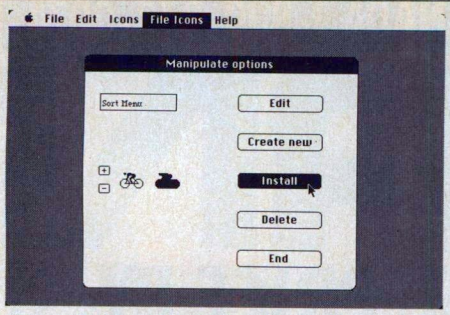


Figure 7: To see Sort Menu's new icon on the desktop, you install it by selecting the Manipulate command and then clicking on the Install button. You can reach the icon-editing window from here by clicking on the Edit button.

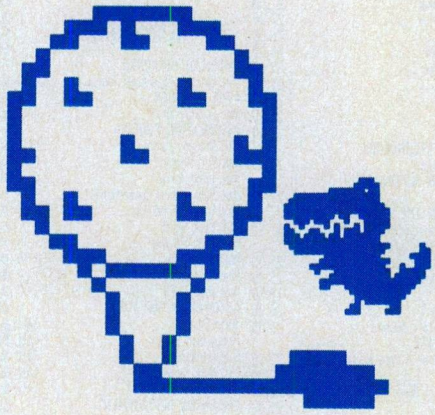
brush on paper, to match your new application icons. The methods of doing so are similar to those described above, except that you don't install document icons with the Install button. Instead, you replace the old document icon with the new one by using the Replace button. You also need to replace the corresponding Desktop file icon.

Unfortunately, document icons installed with Icon Switcher have a tendency to revert unexpectedly back to their original form (or change to yet a third state). The best advice, if you have a customized document icon in a program, seems to be not to place a different version of the same program (another cutomization or the original version) on the same disk or hard-disk volume.

Say Goodbye to Geneva

If you're tired of the Geneva font, you may want to make yet another change to the desktop. The public-domain utility Set Default Font can change the default font (the font used for icon titles and disk information) from Geneva to any font you wish. Keep in mind, however, that the default font applies to all your disks (it is stored in battery-powered RAM) and that an active System file lacking the default font will use a nearly unreadable 9-point version of the Chicago font instead.

As time goes on, developers will certainly provide Macintosh owners with many more tools for adapting their electronic workplace, but even now, the ways in which you can alter your desktop and applications to your needs—or whims—are abundant.



Have fun giving some of them a try; you may be surprised by how much you like the results. ✚

Robert Eckhardt, formerly vice president of Simon & Schuster's Electronic Publishing Division, is a free-lance editor and writer.

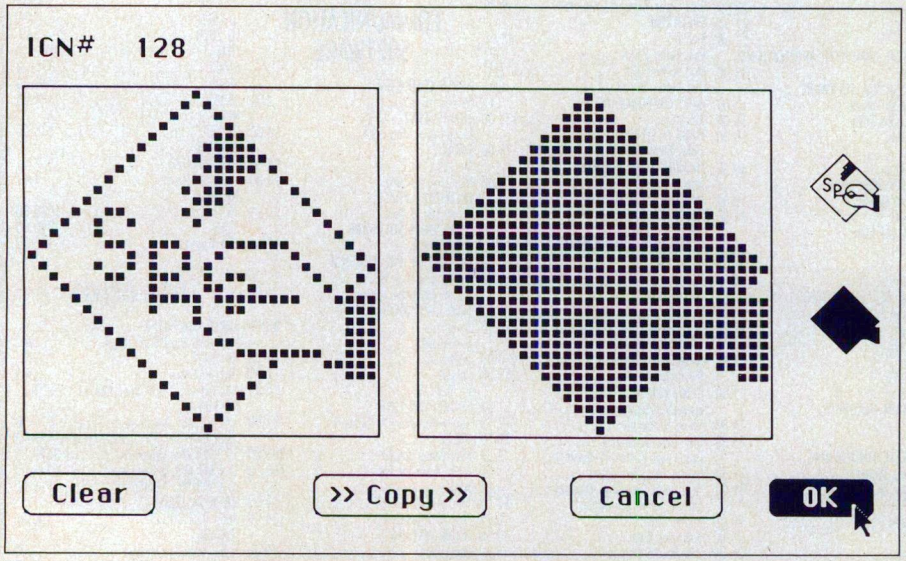


Figure 8: REdit's icon-editing window is easier to use than the one in Icon Switcher. It can, for example, place a duplicate of your icon in the Mask window if you click on >>COPY>>; just fill the duplicate with black to make a new mask.

PRODUCT INFORMATION

DA Installer, Version 1.5
From Quick & Dirty Utilities Volume One
Dreams of the Phoenix, Inc.
P.O. Box 1273
Jacksonville, FL 32247
(904) 396-6952
List Price: Quick & Dirty Utilities Volume One, $39.95
Requires: Macintosh
CIRCLE 430 ON READER SERVICE CARD

Font Librarian
Proper Software
2000 Center Street, Suite 1024
Berkeley, CA 94704
(415) 540-5958
List Price: Shareware, available from users' group software libraries, friends, etc.; $20 for registration and manual
Requires: Macintosh
CIRCLE 431 ON READER SERVICE CARD

Sort Menu
Public domain, available from users' group software libraries, friends, CompuServe's MAUG, etc.
Requires: Macintosh

MenuEdit 1.0
Public domain, available from users' group software libraries, friends, CompuServe's MAUG, etc.
Requires: Macintosh

Font/DA Mover; REdit, Version 1.0; and ResEdit, Version 0.7
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
List Price: Available free from users' group software libraries, friends, CompuServe's MAUG, etc.
Requires: Macintosh

Icon Switcher, Version 1.2 and **Icon Libraries**
PBI Software, Inc.
1111 Triton Drive,
Suite 201
Foster City, CA 94404
(415) 349-8765
List Price: $19.99 each
Requires: Macintosh
CIRCLE 432 ON READER SERVICE CARD

Set Default Font
Emerging Technology Consultants, Inc.
4760 Walnut Street
Boulder, CO 80301
(303) 447-9495
List Price: Public domain, available free from users' group software libraries, friends, CompuServe's MAUG, etc.
Requires: Macintosh

MacTips

Suggestions from our readers

ON THE DOTTED LINE WITH THE FONT UTILITY

Dotted and dashed lines in MacPaint for plans, technical drawings, and designs can be frustrating and tedious to make by dragging dots and filling lines with patterns. Use the Font function for an endless library of even, consistently spaced broken lines and patterns. Periods, colons, slashes, and dashes—they all generate good lines that you can rotate and stretch, cut and paste. Modify them with styles such as bold and outline and with the variety of forms in different fonts, and you'll quickly have decorative borders.

Anthony Reveaux
San Francisco, CA

FILE FINDER

If you type a single letter when you are viewing a list of documents in an open dialog box, the first file that begins with that letter or the next file in the list will be selected. If you quickly type more of the filename, then a file with that specific filename will be chosen.

Dan Allen
Cupertino, CA

WORD, SPELLING CHECKER, AND ONE INTERNAL DRIVE

If you have a Mac 512K or the Mac Plus but only an internal drive, you can still run Microsoft Word with a spelling checker by setting up a special diskette as follows.

The following procedure works only with the new 800K double-sided drive. Set up your **backup** copy of MicroSoft Word by first trashing the Help and Convert files (you might want to copy them to another disk first). Free up as much space on the disk as possible by eliminating any printer drivers you will not be using, and if you are using only an ImageWriter, trash the chooser as well.

Install your spelling checker. I recommend MacSpell+, since it goes onto your disk as an accessory. Do not install the dictionary itself. I used only about 400K by the time I'd installed the spelling checker.

Set up a special disk for your dictionary as follows: Initialize a fresh double-sided disk. Install a copy of RAM (a public-domain RAMdisk utility) or an equivalent RAMdisk. You should select one that will allow you to set the size of the RAMdisk. Copy your dictionary file onto the disk (MacSpell+ calls the file WORDS). Set up a folder with a name that starts with a letter higher than W, such as ZEBRA. This is because RAM loads files in alphabetical order. You do not want anything on your RAMdisk except the dictionary. Copy the System and Finder files into the folder. Set the start-up to be RAMstart or its equivalent. You want to create a disk that will auto-start by running the RAM-drive-installing program.

Shut down your Mac; then start it up with the auto-start disk you've created with RAM on it. When it runs, make sure you set the size of the disk just barely large enough to load your dictionary. It should finish by leaving you at the desktop. Eject the start-up disk and load your Word backup disk. You're now ready to run Word, using your new "two-drive" system!

I think you'll find, as I did, that spell-checking using a dictionary on the RAMdisk is a lot faster than it is with a floppy disk. In any case, having a second drive makes life a lot easier. The first thing you'll notice is that the Drive button is now active in all functions. Just remember, all that you have on the other "drive" is your dictionary.

Be sure to save your document to a floppy diskette before you attempt to use the spelling checker. If anything goes wrong and you lock up the Mac, you'll have to reboot, which means you'll lose everything you've typed.

Ross S. Frid
Cadillac, MI

128K MAC UPGRADES

I own a Macintosh with 128K of RAM. We have all heard about the upgrades to the Mac Plus for all the 128K and 512K owners. I decided to upgrade my internal 400K drive to the 800K double-sided drive. That's when the fun ended. Upon working with the new drive, I kept getting the message Out of Memory, unable to load . . . .

Well, I called my dealer, who didn't have any idea what was wrong. He called Apple, who said, "The internal 800K upgrade is not compatible with a 128K machine." The moral to this story is: Don't rush out to upgrade your internal drive on your 128K machine.

Phil Loveless
Simsbury, CT

A CALL FOR TIPS

If you or your users' group have a collection of MacTips or a MacTips column, send me a copy and if we find it useful for our readers, we will publish the source, along with your or your users' group's name. If you have any new tips, hints, shortcuts, or suggestions for using the Macintosh computer, we would like to publish them in this column. You'll receive credit, and we'll pay $50 for each MacTip that we use. Send your tips to MacTips, *A+* Magazine, Attn: Chip Carman, 11 Davis Drive, Belmont, CA 94002, or send them electronically via CompuServe (72356,2673), GEnie (APLUS), or MCI (APLUS).

Chip Carman
Belmont, CA

Pipeline

II SERIES MAC

OO-TOPOS

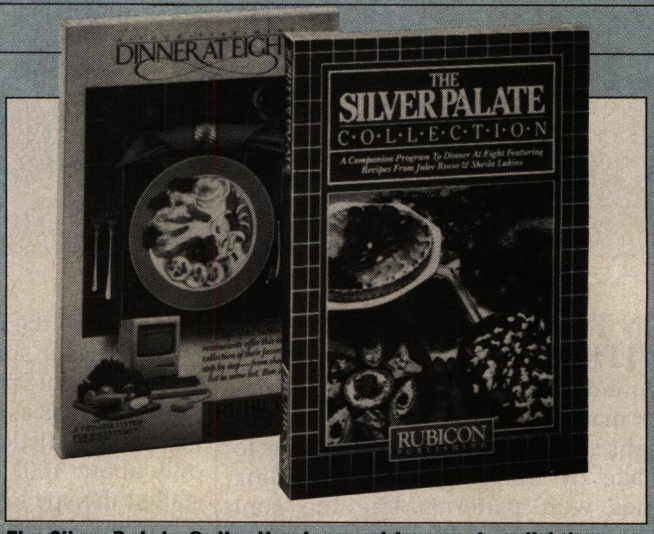
Based on a science-fiction story by Michael and Muffy Berlyn, Oo-Topos is an intermediate-level adventure game in Penguin Software's Comprehend Interactive Novels with Graphics series. The story is set in 1995 A.D., when a meteor has collided with an interstellar transport carrying power-transfusion waste. The waste is scattered toward Earth's Sun and is threatening to destroy all life on Earth. The player's mission is to deliver the chemical seeds of a protective compound that will render the waste harmless. During the voyage, the player's ship is forced to land on the planetoid Oo-Topos, where alien space pirates board and imprison the player. The player must escape before time runs out for Earth. *(List Price: $34.95 for Apple IIs, $39.95 for Macintosh)*

Requires: Apple II, II Plus, IIe, IIc, or Macintosh; 64K RAM
Penguin Software
2600 Keslinger Road
P.O. Box 311
Geneva, IL 60134
(312) 232-1984
CIRCLE READER SERVICE NO. **500**

MAC

THE SILVER PALATE COLLECTION

Rubicon Publishing has released The Silver Palate Collection, an add-on data disk for its Dinner at Eight recipe database. The new disk contains more than 100 original recipes from *The Silver Palate Cookbook*, by Julee Rosso and Sheila Lukins. Users can process the recipes to organize meals by adjusting quantities of ingredients for any number of services, editing recipes, and adding notes. The computer prints out recipes or custom shopping lists and recommends wines. *(List Price: $49.95; Dinner at Eight, $59.95)*



The Silver Palate Collection is an add-on recipe disk for Dinner at Eight.

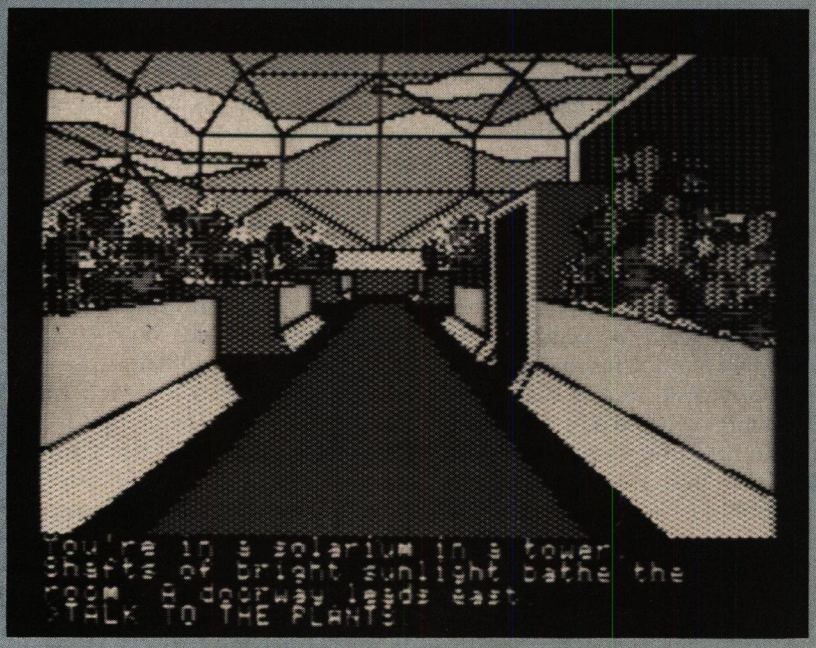
Requires: Macintosh, Dinner at Eight software
Rubicon Publishing
6300 La Calma Drive
Suite 100
Austin, TX 78752
(800) 622-2210
(512) 495-6721
CIRCLE READER SERVICE NO. **501**

MAC

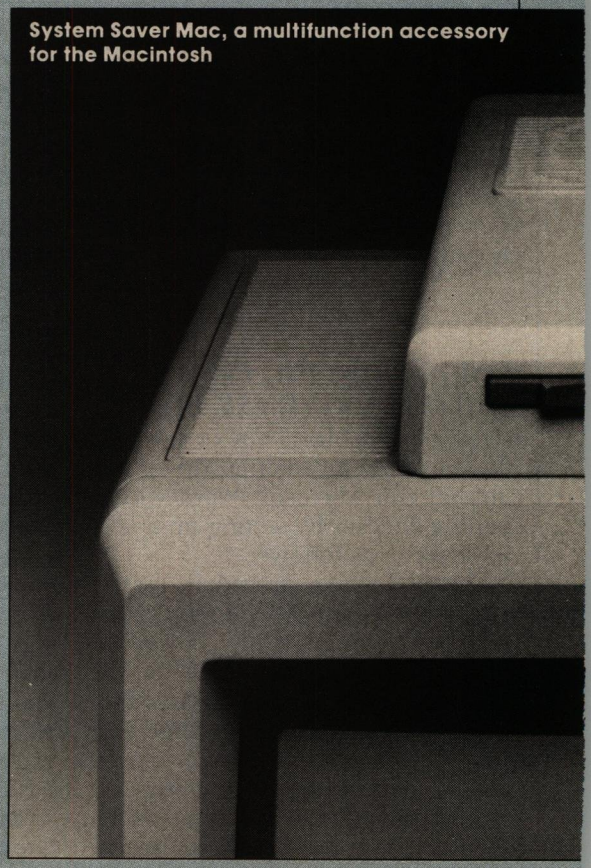
SYSTEM SAVER MAC

A multifunction accessory for the Macintosh, System Saver Mac lets you organize your system's power with two switched outlets for peripherals; protects your system from surges,

A sample screen from the science-fiction adventure game Oo-Topos



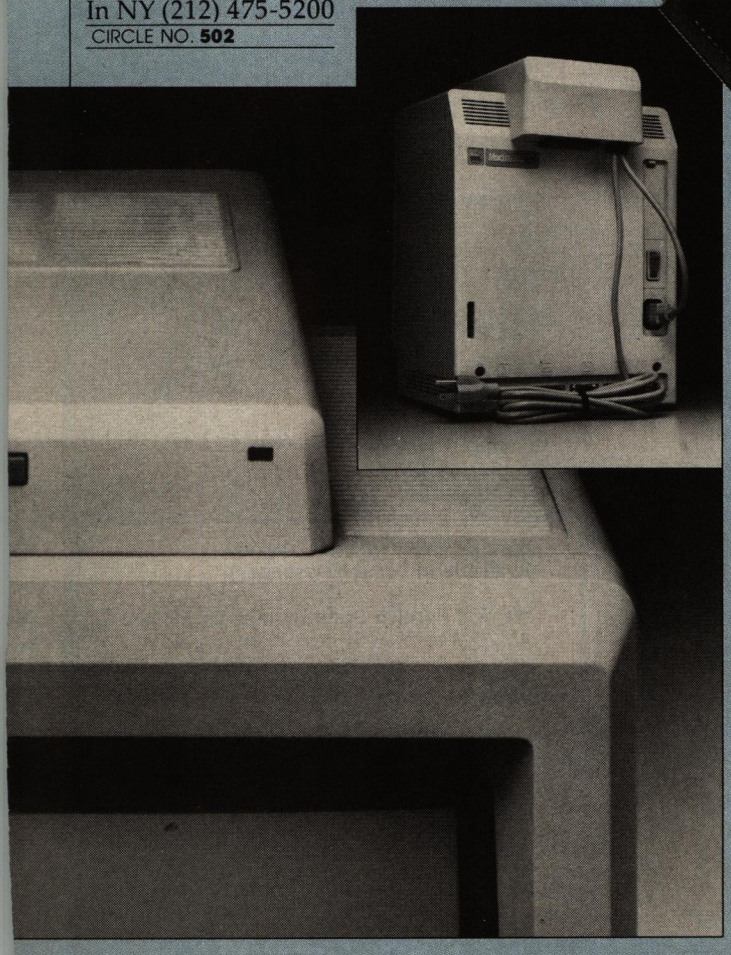
System Saver Mac, a multifunction accessory for the Macintosh



spikes, and noise in the electrical power supply; and provides a cooling fan that draws air through the computer at the rate of 15 to 18 cubic feet per minute. System Saver Mac replaces the Macintosh's power cord with one containing two switched outlets so that you can power peripherals separately. For those who prefer single-switch control, each system comes with a special single-switch cap to replace the two separate switches. *(List Price: $99.95)*

Requires: Macintosh

Kensington Microware Ltd.
251 Park Avenue South
New York, NY 10010
(800) 535-4242
In NY (212) 475-5200
CIRCLE NO. **502**



II SERIES

68000 SYSTEM

Rapid Systems' R68 system combines a single-board, 68000-based computer and a comprehensive software-development package that enables Apple II users to add a Motorola 68000 processor to their computers. The system's hardware features fast data transfers between the Apple and the 68000, eight levels of priority-interrupt hardware, two levels of interrupt from the Apple to the 68000, four 8-bit Apple/68000 interface ports, two 16-bit programmable timer/counters, and a user serial port. In addition, the company can expand the R68's on-board memory from 48K to 256K and offers 8-, 10-, and 12-MHz versions.

The R68's on-board software includes full monitor functions, task and interrupt handlers, and 26 commands for use by any Apple-resident program. It also comes with an Applesoft-support software package that provides communications and software-development commands and a fast S-C macro assembler with an integral coresident program editor. *(List Price: $499)*

The R68 from Rapid Systems, Inc.

Requires: Apple II, II Plus, or IIe

Rapid Systems, Inc.
755 North Northlake Way
Seattle, WA 98103
(206) 547-8311
CIRCLE READER SERVICE NO. **503**

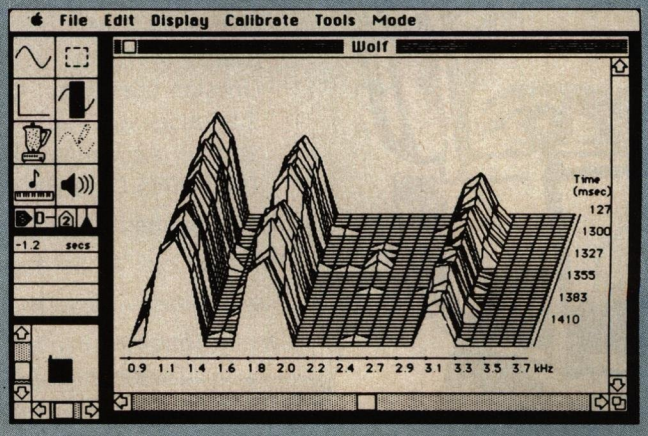
MAC

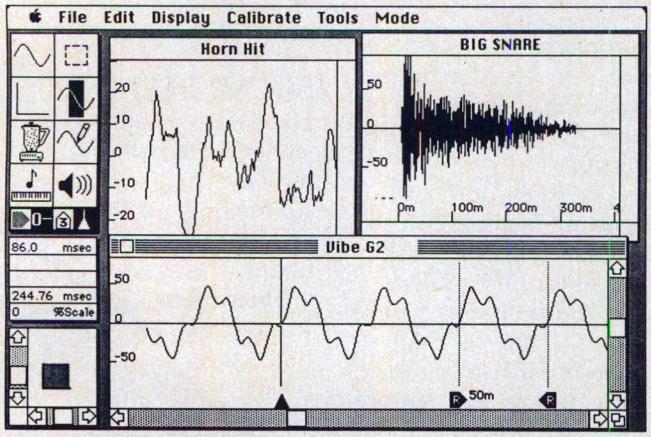
SOUND DESIGNER

Digidesign's Sound Designer for the Macintosh is now available in a version for the Ensoniq Mirage digital-sampling keyboard. The system enables users to store Mirage samples on disk and display up to three waveforms on-screen simultaneously. Sound Designer also provides extensive sound-editing and processing abilities, several looping aids, and advanced digital signal-processing functions. Users can scale waveforms to show any degree of detail. The system's Front Panel mode provides graphic screens for programming all Mirage parameters and functions. *(List Price: $395)*

Requires: Macintosh,

Sound Designer's FFT frequency analysis display





Sound Designer lets users display up to three waveforms simultaneously.

512K RAM, Macintosh
MIDI interface, Ensoniq
Mirage keyboard
Digidesign, Inc.
920 Commercial
Palo Alto, CA 94303
(415) 494-8811

CIRCLE READER SERVICE NO. **504**

HARDWARE

OKIDATA PRINTERS, MODEMS

Okidata has released two new dot-matrix printers—the Microline 292 and the wide-carriage Microline 293—and the CLX Series modems.

Both printers offer dual 9-pin printheads that permit high-quality, single-pass printing. The printers operate at 100 cps in near-letter-quality mode and at 200 cps in utility mode. They can handle a broad range of paper types, from single-sheet, hand-fed paper to four-part continuous forms up to 0.014 inches thick.

Optional modules allow the 290 models to emulate the characteristics of earlier Microline models and are available with parallel and RS-232C and RS-422A serial interfaces.

The CLX96 Series of modems provides 9600-bps, synchronous data transmission in half- or full-duplex mode. Three models—CLX96 (point to point), CLX96FP (multidrop), and CLX96M (multiport)—are available.

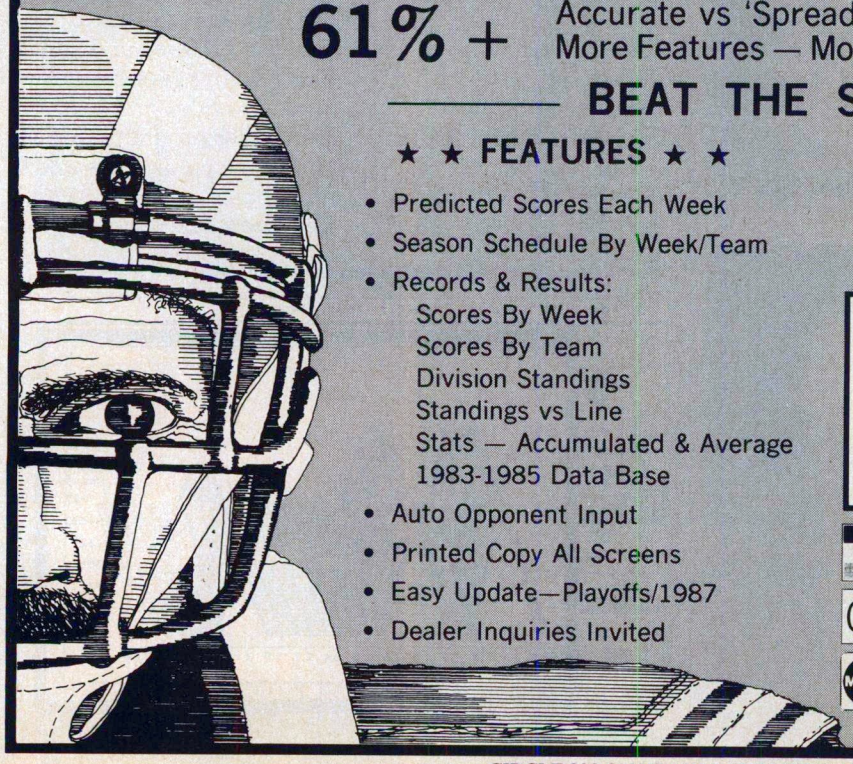
Each model provides automatic adaptive equalization to compensate for varying line conditions. The series also offers built-in diagnostics for isolating faults. *(List Price: Microline 292, $699; Microline 293, $899; CLX96, $1445; CLX96FP, $1995; CLX96M, $2195)*

Okidata
532 Fellowship Road
Mt. Laurel, NJ 08054
(609) 235-2600

CIRCLE READER SERVICE NO. **505**

PIK'EM 86

★ ★ ★ ★ **A Complete Pro Football Prediction Program For The 1986 NFL SEASON**



61% + Accurate vs 'Spread' Since 1981
More Features — More Information In 1986 To . . . . . .

BEAT THE SPREAD

★ ★ FEATURES ★ ★

- Predicted Scores Each Week
- Season Schedule By Week/Team
- Records & Results:
  - Scores By Week
  - Scores By Team
  - Division Standings
  - Standings vs Line
  - Stats — Accumulated & Average
  - 1983-1985 Data Base
- Auto Opponent Input
- Printed Copy All Screens
- Easy Update—Playoffs/1987
- Dealer Inquiries Invited

54.95 INCLUDES DISK, DOCUMENTATION SHIPPING & HANDLING

- Apple II — IIc — IIe
- Commodore 64 — 128
- IBM PC, Tandy & Compatibles
- TRS-80 MIII/IV

Stats Needed To Run Program Available In Local Newspapers Or We Will Furnish Stats By Mail Or Modem All 20 Weeks — Season Price . . . 40.00

Program Comes Updated Thru Current Week Of Season . . . No Extra Charge

VISA C.O.D. MasterCard

ORDERS SHIPPED IN 2 DAYS PHONE LINES OPEN 24 HRS.

TOLL FREE — 800-722-2277
TEXAS COLL. — 214-586-8212

MARATHON SOFTWARE DEPT. A
P. O. BOX 1349
JACKSONVILLE, TEXAS 75766

TOLL FREE & COLLECT FOR ORDERS ONLY

CIRCLE 293 ON READER SERVICE CARD

HARD/SOFTWARE

II SERIES

MUSICOM

Musicom is a comprehensive music-education system that provides computer-aided instruction for people of any age or level of proficiency. The Musicom system comprises several courses, including Beginning Ear Training, Basic Keyboard Technique, Intermediate Music Theory, and MIDI Piano Course. Each course uses various instructional techniques, including tutorials, drill-and-practice exercises, and noncompetitive games.

The Ear Training courses use a Pitch and Rhythm Detector (PRD) interface card that plugs into the computer's expansion slot to provide a microphone connection. As students sing into the microphone, the PRD sends this musical information to the program, which displays it on the screen in standard musical notation. The program evaluates and reports on the accuracy of students' pitch and rhythm. Musicom's lesson topics include singing single notes, tunes, and melodic and harmonic intervals; sight singing; and theory outline.

The Keyboard Skills course uses any MIDI-equipped keyboard instrument and presents basic music theory, followed by lessons on right- and left-hand technique. On-screen graphics illustrate playing principles. *(List Price: $495 each)*

Requires: Apple II Plus or IIe, 64K RAM, Xanadu IFM-APL card, Roland MPU-401 MIDI Processing Unit, microphone

RolandCorps US
7200 Dominion Circle
Los Angeles, CA 90040
(213) 685-5141

CIRCLE READER SERVICE NO. **506**

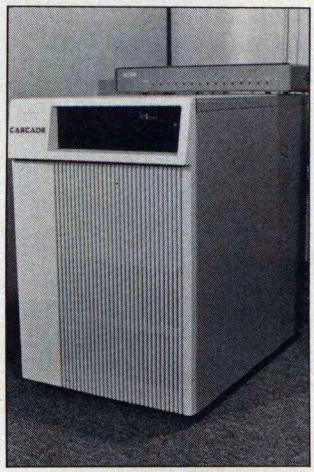
II SERIES

CASCADE SPEEDLINK

The Cascade Speedlink hardware/software local-area network can interconnect microcomputer-based Cascade CAD systems and provide storage for up to 4500 complete E-size drawings. Each Cascade CAD system on the network functions as a dedicated workstation and has local storage for up to 75 E-size drawings. Via Speedlink, users can transfer drawings and word-processing and statistical data from each workstation to a plotter or to remote storage up to four miles away.

The Speedlink hub unit fits under a desk or drawing board and can hold up to three porting panels, permitting links to 29 workstations.

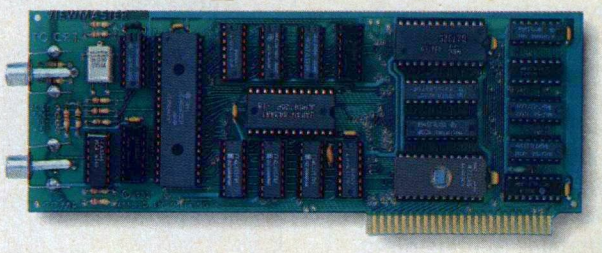
Users can connect addi-



The core unit of the Cascade Speedlink local-area network for CAD systems

Viewmaster 80

Now run AppleWorks™ on your II+ *and* keep full 80 column compatibility!



	BUILT-IN SOFTSWITCH	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN HOME	7 x 9 DOT MATRIX	LIGHT PEN INPUTS	40 COLUMN OVERRIDE	INVERSE CHARACTERS	
VIEWMASTER 80	✓	✓	✓	✓	✓	✓	✓	✓	
SUPRTERM		✓					✓	✓	
WIZARD 80					✓		✓	✓	
VISION 80	✓	✓			✓				
OMNIVISION		✓					✓	✓	
VIEWMAX 80	✓	✓			✓			✓	
SMARTERM	✓	✓				✓	✓		
VIDEOTERM		✓	✓		✓	✓		✓	

One look at the chart will give you some of the reasons there's only one smart choice in 80 column cards for your Apple. But the real secret to Viewmaster 80's success is something even better: Total compatibility.

Each Viewmaster 80 includes our powerful AppleWorks expand software, allowing AppleWorks to run on the II+ with only 64K (or more) memory. (We recommend the RamFactor memory card, but any compatible Apple memory card will work.) The software provides our full range of AppleWorks enhancements, including expanded records, word processor, multi-disk saving, time and date display on screen with any PRO-DOS clock, and more!

The Viewmaster 80 works with all 80 column applications, including DOS 3.3, PRO-DOS, CP/M, Pascal, WordStar, Format II, Applewriter II, dBase II, Visicalc, Multiplan, and *hundreds* of others—including AppleWorks.

Here are just a few of the powerful features the Viewmaster 80 delivers for a great price ($139):
• 80 Characters by 24 lines • Fully compatible with all Apple languages and software • Highest compatibility with existing 80 column software • Very low power consumption • High speed (18 MHZ) scroll rate • Upper and lower case characters and true descenders, both inverse and normal; all on-screen editing functions are supported • User-definable cursor shape • Compatible with Apple II, II+ and IIe • Five-year warranty

Call today to order or for more information, 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5⅛% sales tax. Add $10.00 outside U.S.A.

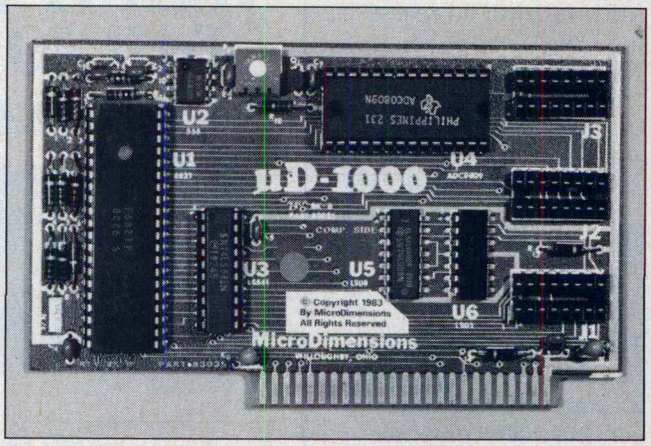
Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

tional porting panels to increase the number of workstations to more than 100. Resident software controls access to any stored drawing. Each Speedlink also includes SuperCalc3 software for spreadsheets, Superwriter for word processing, LAN:Mailmonitor for electronic mail, and LAN: Datastore for relational-database management. Five models of Speedlink are available, ranging from 189 megabytes to more than 1 gigabyte. *(List Price: $21,995–$56,995, depending on model)*
Requires: Apple II or III, Cascade I software
Cascade Graphics Systems
16842 Von Karman Ave.
Irvine, CA 92714
(714) 474-6200
CIRCLE READER SERVICE NO. **507**

uD-1000 I/O SYSTEM

Complete and ready to use, the uD-1000 I/O system is designed to simplify input/output on Apple II Plus and Apple IIe computers. The uD-1000 plugs into one of the computer's slots and provides eight digital inputs, eight digital outputs, and eight analog inputs.

A User Interface Module simplifies testing of user-developed hardware and software. The system also comes with The Hook software, which allows you to use Applesoft BASIC without using POKE or PEEK instructions. You can then use standard BASIC variable names to provide the values of each I/O channel. *(List Price: $169; shipping and handling, $2.50)*
Requires: Apple II Plus or IIe
MicroDimensions, Inc.
4780 Beidler Road
Willoughby, OH 44094
(216) 946-8070
CIRCLE READER SERVICE NO. **508**



The uD-1000 is an easy-to-use I/O system for Apple II computers.

SOFTWARE

HALF-PRICE APOLLO SOFTWARE

Schmidt Enterprises is offering its software products The Apollo Accountant and The Apollo Database System to Apple users' group members for half their regular price.

The Accountant is a fast, easy-to-use, disk-based accounting package that lets users enter an unlimited number of transactions and store more than 4000 transactions on one disk. Users can display monthly and yearly totals of any category instantaneously, and a complete on-screen summary of all accounts and categories is always available. The package also balances all accounts and prints complete reports.

The Apollo Database System lets users design file forms of any length; sort files by any field, in ascending or descending order; and insert formulas into any file field to create complex spreadsheets. It instantly retrieves, prints, removes, or transfers any file or group of files.

Both packages have on-screen help menus and come with easy-to-read manuals with tutorials and sample system disks. *(List Price: $60 each for users' group members)*
Requires: Apple II, II Plus, IIe, or IIc
Schmidt Enterprises
7448 Newcastle Avenue
Reseda, CA 91335
(800) 232-6777
In CA (818) 342-5930
CIRCLE READER SERVICE NO. **513**

EREZ ANSEL ENGINEERING SOFTWARE

Frame-Mac, Beamac II, and Beamac, three structural- and civil-engineering software packages for Macintosh computers, are now available from Erez Ansel. All packages provide an accuracy of 19 decimal digits, a choice of units, and a choice of decimal format.

Designed to analyze and assist in the design of any 2-D frame or truss, Frame-Mac allows any number of nodes and prismatic elements and any number of any type of static loads. Beamac II is intended to analyze and assist in the design of any continuous (indeterminate, multispan) or simply supported beam. It allows any number of nodes, supports, hinges, and static loads. Both packages use the modified Cholesky method to solve the structure's stiffness matrix and come with a table of standard section data on disk, which users can add to or change. The packages also have several design aids and several text and diagram windows and allow users to print, copy, or save the contents of any window.

Beamac analyzes any simply supported (statically determinate) beam, performing linear analysis by using the equilibrium of forces and moments methods. A beam can have one fixed support at either end or one pin and one roller support with or without overhangs and any number of any type of static load. Users can change beam parameters at any time and can print and save the contents of any window. *(List Price: Frame-Mac, $495; Beamac II, $295; Beamac, $95)*
Requires: Macintosh, 128K RAM (Beamac) or 512K RAM (Frame-Mac)
Erez Ansel
5800 Arlington Avenue
Suite 5T
Riverdale, NY 10471
(212) 884-5798
CIRCLE READER SERVICE NO. **511**

CASL CHEMISTRY SOFTWARE

Computer Assisted Science Labs (CASL) has introduced Chemistry for the 21st Century for use in high-school and college chemistry laboratories. The menu-driven, easy-to-use program enables up to 150 students per day to use a single central computer linked to a Galaxy toploading electronic balance from Ohaus Scale Corporation. Students can perform experiments involving the determination of density, heat of chemical reactions, conservation of mass, molecular mass, stoichiometry, molarity, solubility constant, and more. They make preliminary readings on a triple-beam balance at the workbench and use the Galaxy balance interfaced to the computer for final weighings. The computer collects all data, grades each activity, instructs students if necessary, and produces printouts showing all data and calculations. *(List Price: software, reproducible student lab manual, teachers' key, and RS-232 interface card and connecting cable, $475; same set with Ohaus Super C balance, $895; same set wth G400 Ohaus balance, $1375)*

Requires: Apple II Plus or IIe, Galaxy balance

CASL, Inc.
6818 86th Street E.
Puyallup, WA 98371
(206) 845-7738

CIRCLE READER SERVICE NO. **509**

FOOBLITZKY

Fooblitzky is a multiplayer game of deduction, strategy, and chance featuring animated graphics. In the game, players must roam the crowded streets and shops of the city of Fooblitzky trying to deduce and obtain the four secretly chosen objects they need to win the game. Victory depends on using funds well, keeping records, and outsmarting fellow players. The game comes with four workboards and markers and two sets of rules. *(List Price: $39.95)*

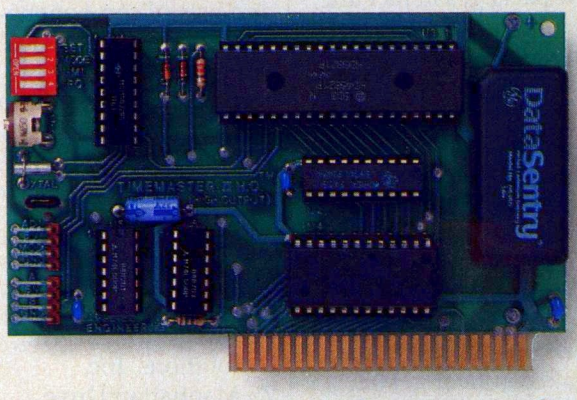
Requires: Apple IIe or IIc, 128K RAM

Infocom, Inc.
125 Cambridge Park Drive
Cambridge, MA 02140
(617) 492-6000

CIRCLE READER SERVICE NO. **510**

The CASL chemistry software links an Apple II computer with a Galaxy electronic balance.

Timemaster H.O.™, the only clock that displays time and date on AppleWorks'™ screens and files.



Now, get all the features of all the competition combined!

It's the smart way to put the time and date on your Apple II+® or IIe®. Because only the Timemaster H.O. packs *ALL* the features of all the competition *combined,* including leap year, year (not just in PRO-DOS), month, date, day of week, hours, minutes, seconds and milliseconds. It's totally PRO-DOS, DOS 3.3, PASCAL and CP/M compatible. And of course, it works better than any other clock with AppleWorks.

If you're using or writing software for other clock cards, you're still covered. Because the H.O. will *automatically* emulate them. And the Timemaster H.O. adds 14 new commands to BASIC. The H.O. even comes complete with two disks full of sample programs, including a computerized appointment book, a DOS dating program, interrupt programs, and over 30 programs that others charge extra for — or don't even offer.

As a low-cost option, you can add true BSR remote control to the H.O., giving you remote control of up to 16 lights and appliances in your home or office.

• Fully PRO-DOS and DOS 3.3, CP/M and PASCAL compatible • Time in hours, minutes, seconds and milliseconds (the ONLY PRO-DOS compatible card with millisecond capability); date with year, month, day of week and leap year • 24-Hour military format or 12-hour AM/PM format • Eight software controlled interrupts so you can run two programs at the same time (many examples included) • Can be set to the second • Allows AppleWorks to time and date stamp all data automatically • The only clock card that displays time and date on the AppleWorks screen • Five-year warranty

Clock price **$129.00**
BSR option (may be added later) ..... **$ 49.00**

Call to order today, 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5⅛% sales tax. Add $10.00 outside U.S.A.

Æ Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

MAC

PARAGENESIS CAE SOFTWARE

Advanced Engineering Solutions has released two new packages in its ParaGenesis series of CAE software for the Macintosh computer.

Digital Macroscope allows engineers to perform gate- and functional-level digital simulations. Three types of simulation are available: 12 State Logical, Physical, and Parametric. The 12 State mode can resolve true, false, strong, weak, conflicting, HiZ, and undefined logic states. The Physical mode computes the gates' output rise and fall times from the source- and sink-current driving-load and input capacitances. The Parametric mode allows supply-voltage and temperature variations and monitors the network's power consumption.

Users can enter the circuit to be simulated via the keyboard or from Schematic Entry, the company's second new package. Schematic Entry is a drawing package that allows users to design electrical schematics graphically. As users design a circuit, Schematic Entry creates a database of parts, pins, and nodes for generating schematic plots and lists of components and interconnects. This database passes the required interconnect information automatically to Digital Macroscope. *(List Price: Digital Macroscope, $1000; Schematic Entry, $700)*

Requires: Macintosh, 512K RAM

Advanced Engineering Solutions, Inc.
75 Manhattan Drive
Suite 302
Boulder, CO 80303
(303) 499-2910

CIRCLE READER SERVICE NO. **517**

II SERIES

HRM SOFTWARE

Human Relations Media (HRM) has released three educational-software packages.

Designed for students in grades 9 through college, Reaction Time: Balancing Chemical Equations uses an interactive, graphical game format to test students' understanding of typical inorganic chemical equations. The program has seven sets of reaction data, each set showing the chemical formulas for 15 elements or compounds. Students must use these chemicals as reactants and products to construct as many different reactions as possible in each set, adding coefficients to create balanced equations. The program corrects reactions and produces scores.

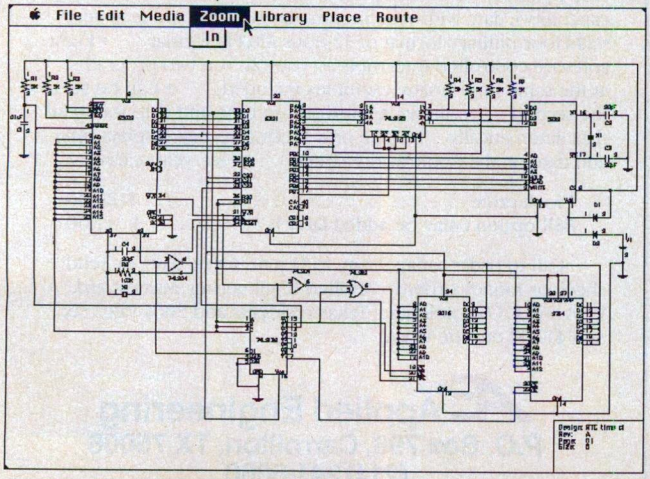
Designed for grades 6 through college, Guess My Rule is a math program concentrating on number patterns and relationships, functions, graphing, and problem solving. Students must collect information in order to guess an unknown mathematical rule. To do this, they enter a number, and the program displays the value it gets from using the rule. It displays the value in a table and as a point plotted on a pair of axes.

Finally, Playing to Learn, for grades 4–12, is a set of four math games that challenges students to sharpen their abilities to observe, analyze, deduce, and induce. Crazy Dice tests pattern recognition through addition, subtraction, multiplication, and raising to powers. Dr. Factor reinforces players' knowledge and understanding of factoring whole numbers. Even Wins is a counting game based on binary and even and odd numbers. Bubbles lets players make "informed guesses," or estimates, of numbers and percentages, about quantities of bubbles. *(List Price: $59 each)*

Requires: Apple II, II Plus, IIe, or IIc; 48K RAM (Guess My Rule, 64K RAM)

Human Relations Media
175 Tompkins Avenue
Pleasantville, NY 10570
(800) 431-2050
In NY (914) 769-6900

CIRCLE READER SERVICE NO. **518**



A screen image from one of Advanced Engineering's new CAE software packages

II SERIES

CUBIC TIC-TAC-TOE

Cubic Tic-Tac-Toe is a game of skill that tests players' abilities to think in three dimensions. The program features six game levels and three levels of difficulty. The object of the game is to place three Xs or three Os in a row, either horizontally, vertically, or diagonally, in three dimensions. Every game is different, and the program keeps track of scores. Users can play against an opponent or the computer and can choose to play with time limits on moves. *(List Price: $29.95)*

Cubic Tic-Tac-Toe is a three-dimensional version of the old game.

Requires: Apple II Plus, IIe, or IIc

Brown-Wagh Publishing
100 Verona Court
Los Gatos, CA 95030
(408) 395-3838

CIRCLE READER SERVICE NO. **519**

A+

THE INDEPENDENT GUIDE FOR APPLE COMPUTING

If you use a Macintosh or any Apple II Series computer, subscribe to **A+** and you'll get the ideas and information you need to improve the way you work with your Apple:

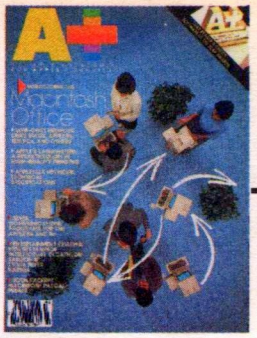
- IN-DEPTH PRODUCT REVIEWS AND EVALUATIONS
- HELPFUL BUSINESS, EDUCATIONAL AND PERSONAL APPLICATIONS
- HANDS-ON TUTORIALS
- USER-TO-USER TIPS

A+ MAGAZINE

The only Apple Magazine you'll ever need.
Subscribe today and save up to 50%.

For faster service call toll-free

1-800-852-5200



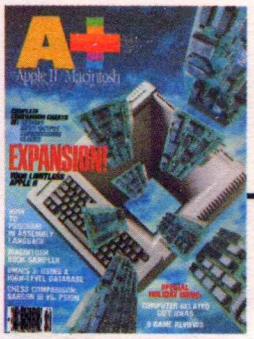
SUBSCRIBE TO A+ AND SAVE UP TO 50%!

Please enter my subscription to **A+:**
☐ 1 year (12 issues) $19.97. Save 44%!
☐ 2 years (24 issues) $35.40. Save 50%!

Name_____
4S697
Company_____
Address_____
City_____ State_____ Zip_____

Check one: ☐ Payment enclosed ☐ Bill me later

Add $6 per year in Canada and all other foreign countries.
Please allow up to 60 days for delivery of first issue. Savings based on annual newsstand price of $35.40.



SUBSCRIBE TO A+ AND SAVE UP TO 50%!

Please enter my subscription to **A+:**
☐ 1 year (12 issues) $19.97. Save 44%!
☐ 2 years (24 issues) $35.40. Save 50%!

Name_____
4S697
Company_____
Address_____
City_____ State_____ Zip_____

Check one: ☐ Payment enclosed ☐ Bill me later

Add $6 per year in Canada and all other foreign countries.
Please allow up to 60 days for delivery of first issue. Savings based on annual newsstand price of $35.40.

GIVE A+ AS A GIFT & SAVE!

Please enter the following one-year gift subscription to **A+** for only $19.97, a 44% savings off the single copy price of $2.95.

☐ Payment enclosed
☐ Bill me later

SEND TO:_____
Company_____ 4S713
Address_____
City_____ State_____ Zip_____

GIFT FROM:_____
Company_____
Address_____
City_____ State_____ Zip_____

☐ Please enter a subscription in my name too!

Charge My:
☐ Visa ☐ Amex
☐ MasterCard

Card No:_____

Exp. Date_____

Add $6 per year in Canada and all other foreign countries.

Please allow 30 to 60 days for delivery of first issue.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE

A+
Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

P.O. Box 2964
Boulder, Colorado 80321

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE

A+
Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

P.O. Box 2964
Boulder, Colorado 80321

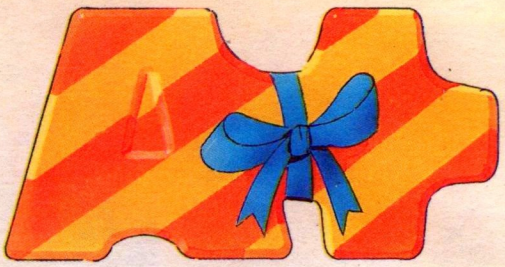
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE

A+
Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

P.O. Box 2964
Boulder, Colorado 80321



GIVE A ONE-YEAR SUBSCRIPTION TO A+

...And give a friend thousands of ways to get the most out of their Apple! Your **A+** gift brings:

- INFORMATIVE ARTICLES
- HANDS-ON TUTORIALS
- USER-TO-USER-TIPS
- TIMELY PRODUCT REVIEWS
- INDUSTRY NEWS

... 12 times a year!

GIVE A+ NOW!

For faster service call toll-free

1-800-852-5200

$29.95

A SMALL PRICE TO PAY TO FIRE UP YOUR INVESTMENTS.

Invest it in the Dow Jones News/Retrieval® Membership Kit, and sample the nation's premier online financial information resource. With five free hours* to explore, a User's Guide to point the way, and a subscription to *Dowline*—the magazine of News/Retrieval, filled with case studies and insights—the Membership Kit will show you how to find fuel for your investment ideas. Monitor current stock quotes, or track historical trends for companies or industries that interest you. Call up earnings and economic forecasts, and reports from major brokerage houses. Get breaking news as early as 90 seconds after it appears on the newswires, as well as news from *The Wall Street Journal* back to January 1, 1984 (online exclusively with News/Retrieval)—to see what impact government or world events are having on the marketplace.

You can access News/Retrieval with almost any computer and modem, terminal or communicating word processor.

The Dow Jones News/Retrieval Membership Kit. Use it to kindle *your* success. Without getting burned. To order or for more information, call **1-800-345-8500, Ext. 373.** (Alaska, Hawaii and foreign, call 1-215-789-7008, Ext. 373.) Or use the coupon today.

YES! I WANT MY INVESTMENTS FIRED UP.

☐ **Personal offer-$29.95 Each** includes:
• 5 Free Hours* • Single Password
• User's Guide • 1 Year of *Dowline*
• $12 Annual service fee waived for 1 year

☐ **Corporate offer-$49.95 Each** for multiple users, includes: • 8 Free Hours* • Multiple Passwords • User's Guide • 1 Year of *Dowline* • $12 Annual service fee waived for 1 year

☐ **Send more information**

$____ENCLOSED (Check/Money Order) ☐Bill me later Charge to: ☐AmExp ☐MC ☐VISA

(If you pay by credit card, all subsequent usage charges will be billed to your credit card.)

Card No. _____ Exp. Date_____

Signature (required)_____

Name_____

Company _____

Address _____

City/State/Zip _____

Daytime Phone Number_____

Computer Make & Model_____

Mail to: DJN/R Membership Kit, P.O. Box 300, Princeton, NJ 08543-0300
ATTN: John McGovern 50AA0806E

Dow Jones News/Retrieval®

Fuel for your ideas.

$29.95 Membership Kit also available at computer retailers and selected bookstores.

*Per account. Limited to new subscribers only. Free time (5 hours per Personal offer, 8 hours per Corporate offer) must be used within 30 days of receipt of password. Certain databases have fees over and above usage charges which are excluded from free time offer. Copyright © 1986 Dow Jones & Company, Inc. All rights reserved. Dow Jones News/Retrieval is a registered service mark of Dow Jones & Company, Inc.

CIRCLE 277 ON READER SERVICE CARD 4H680

MAC

MACRUN

A runners' log for the Macintosh, MacRun consists of five template programs that work with Multiplan or Excel to record 16 months' running activity. The programs are divided into three sections. The first, Daily Record, lets users enter distance, time, and a 60-character comment and then computes daily pace, weekly total mileage, and average pace. The second section, Weekly Summary, uses Daily Record entries to produce a summary of weekly total distance, average pace, year-to-date mileage, and a six-week moving average of weekly mileage. Finally, Competition Record records the top three performances at common competitive distances from one mile to a marathon. *(List Price: $34.95)*

Requires: Macintosh; with Multiplan, 128K RAM, one disk drive; with Excel, 512K RAM, two disk drives

Run Soft Products
15920 N.E. Siskiyou
Portland, OR 97230
(503) 256-4806

CIRCLE READER SERVICE NO. **522**

II SERIES

WORD BANK

Word Bank is a four-game program that helps children up to third grade develop word-recognition and classification skills. Each game—Side by Side, Drop in the Box, Window Shopping, and Picture Frame Up—contains four graded levels of words. Children use visual memory and phonics to identify words and to associate meanings as they categorize words. The 1300 words the games contain comprise words that occur frequently and that have regular spelling patterns. Teachers can expand and customize the word lists. *(List Price: $49.95)*

Requires: Apple II Plus, IIe, or IIc; 48K RAM

Learning Well
200 South Service Road
Roslyn Heights, NY 11577
(800) 645-6564
In NY (516) 621-1540

CIRCLE READER SERVICE NO. **523**

II SERIES

MICRO LEAGUE BASEBALL

A baseball strategy game endorsed by Major League Baseball and the Players' Association, Micro League Baseball lets users manage Major League baseball players—setting up and changing lineups, choosing pinch hitters, and planning offensive and defensive strategies. The simulation is based on real players and statistics and displays results of games in full-color graphics. The Game Disk comes with information for 25 Major League games. Also available are NL and AL roster/player disks for each season and a GM/Owner Disk that lets users update rosters and stats and trade and draft players. *(List Price: Game Disk, $39.95; Team Disks, $19.95 each; GM/Owner Disk, $39.95)*

Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive

Micro League Sports Association
28 E. Cleveland Avenue
Newark, DE 19711-5711
(800) PLAYBAL
(302) 368-9990

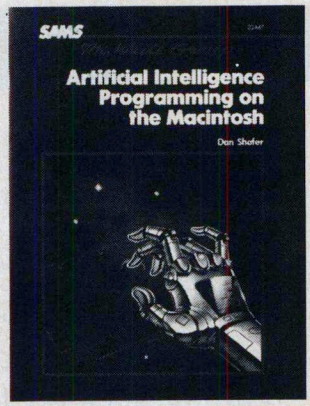
CIRCLE READER SERVICE NO. **524**

BOOKS

MAC

ARTIFICIAL INTELLIGENCE PROGRAMMING

Artificial Intelligence Programming on the Macintosh, by Dan Shafer, is a



Artificial Intelligence Programming on the Macintosh

380-page softbound book intended for those who have a basic understanding of computers and programming.

It contains ten programs written in Logo, each of which includes ideas for expanding on concepts. The book provides a step-by-step introduction to the basics of artificial-intelligence programming techniques and concepts, including how to move cannibals and missionaries, build property lists, construct a vocabulary and formats, and use pattern matching to beat the system in the Intelligent Maze Game. *(List Price: $24.95)*

Requires: Macintosh

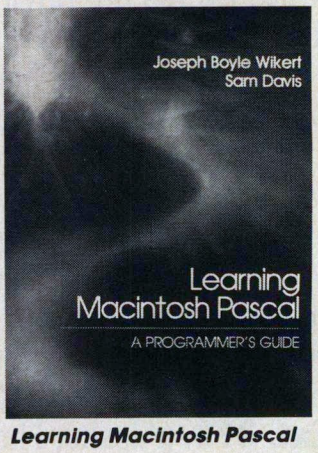
Howard W. Sams & Co.
4300 West 62nd Street
Indianapolis, IN 46268
(800) 428-SAMS
(317) 298-5409

CIRCLE READER SERVICE NO. **540**

MAC

LEARNING MACINTOSH PASCAL

A 352-page softbound book by Joseph Boyle Wikert and Sam Davis, *Learning Macintosh Pascal: A Programmer's Guide* is suitable both for beginners and experienced programmers. The book introduces the Macintosh desktop and operating system and discusses the fundamentals of MacPascal—from the basic structure of a Pascal program to procedures, data types, variables, and arrays. It also explains such advanced topics as pointers, linked lists, trees, stacks, and recursion. The book includes dozens of short program examples, screen displays, and four useful application programs and shows users how to program graphics, animation, sound, and music using Toolbox routines. *(List Price: $19.95)*



Learning Macintosh Pascal

Requires: Macintosh

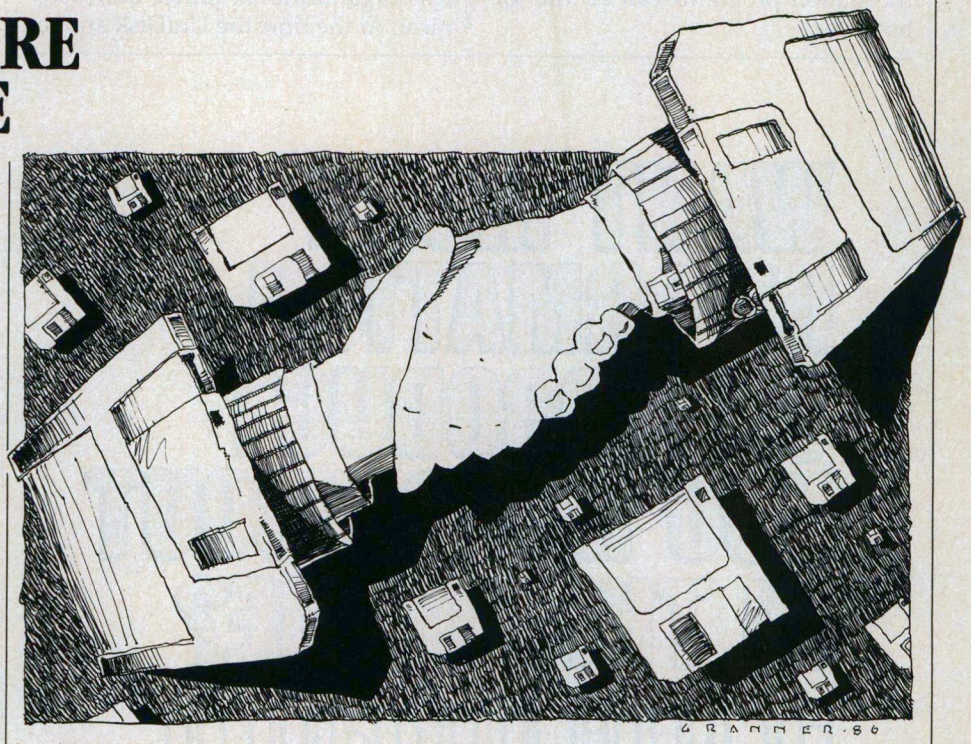
Scott, Foresman and Company
1900 East Lake Avenue
Glenview, IL 60025
(312) 729-3000

CIRCLE READER SERVICE NO. **541**

BY STEVE ROSENTHAL

THE MEDIA ARE THE MESSAGE

The ongoing problem of diskette incompatibility



Why can't a Macintosh read a 3.5-inch diskette created with an Apple II UniDisk? After all, the two disk drives use the same mechanisms, the same diskettes, and a similar disk-controller circuit.

And why can't you use a Macintosh to read a diskette written on by an IBM PC with 3.5-inch drives? Why can't Apple II users exchange data files on diskette with people who choose Macs, Atari STs, or Amigas with 3.5-inch drives?

Sadly, 3.5-inch diskettes on different machines are *not* very compatible. Despite the seeming convergence both at Apple and among other manufacturers on a standard size, type, and package for small floppy diskettes, most machines still cannot read diskettes on which some other type of computer has written. The diskettes themselves are standardized, but we have seen no similar progress toward agreement on how to represent the information that might be written on them.

It's as if the newspaper industry had agreed on a standard size and type of printing paper but failed to establish a standard alphabet, vocabulary, or conventions for arranging the words within sentences.

Of course, the situation is not completely hopeless. Just as there are multilingual people, foreign-language translators, and the ability to do a certain amount of duplication without knowing what a foreign newspaper says, computers too can be taught to work with foreign diskettes. To see why that's necessary and why Apple Computer, Inc. has a particular problem in this regard, let's take a closer look at what's going on inside some of those disk drives.

Apple's Drives

Apple's drives, as you might expect, are the most unusual, employing both a different method of packing in sectors of data and a different data-encoding method than those of the rest of the personal-computer industry.

Sadly, 3.5-inch diskettes on different machines are not very compatible.

Rather than limit the number of data sectors per track to what would fit on the shortest distance around the diskette, just outside the diskette center, Apple engineers decided instead to divide the diskette surface into several bands and to pack the tracks in each band with as many sectors as would fit. On Macintosh and UniDisk diskettes, for example, the inner band has 8 sectors per track, the next has 9, and so on through 12 for the outside band.

Because the drive electronics read and write pulses at a nearly constant rate, the only practical way to get more sectors onto a track is to lengthen the rotation time—so the Apple drives change the rotation rate of the diskette as the head moves in and out between the various sector-density bands.

Apple also encodes its data in a unique manner. While the rest of the industry represents data values as magnetic pulses, using a method involving separate clock and data pulses, Apple uses a method known as group coded recording (GCR), which represents both data and clocks as combined patterns that take up less total space (some hard-disk manufacturers also use GCR).

Using the variable rotation rates

ILLUSTRATION BY COURTNEY GRANNER

and GCR, Apple's 3.5-inch format packs 512 bytes onto a sector, 800 sectors onto a side, and 400K or 800K onto a diskette.

Unfortunately, the Apple II UniDisk format and the Macintosh disk-drive format have different methods for finding what information is within those hundreds of kilobytes, so you can't read diskettes from one using the normal commands and programs of the other. A growing number of translation programs can do the job, however.

In the future, an Apple objective will be compatibility among all Apple peripherals.

As to why these machines don't share a common diskette format, even Apple admits that the problem was organizational rather than technical: At the time the UniDisk and the Mac were being designed, Apple was split into separate Macintosh and Apple II divisions, neither of which was willing to use a format the other had developed because of competition and hostility between the groups.

In the future, say Apple spokespeople from John Sculley on down, an Apple objective will be compatibility among all Apple peripherals. Perhaps that attitude will help out for the next generation of disk drives. Right now, you have to look outside Apple for programs or hardware to move data from the II to the Mac.

Tracking IBM

In the IBM world—and also in the Atari ST series—3.5-inch diskettes are formatted to closely resemble the format IBM uses for its 5¼-inch drives. Each track contains exactly 9 sectors and each sector 512 bytes. The innermost track has the same number of sectors and bytes as the outermost one does, and the diskette rotates at a constant rate (the pulses are just packed closer together on the inner tracks).

Instead of using GCR, data encoding involves the MFM (modified frequency modulation) method, with distinctive data and timing pulses (called clock pulses).

A 3.5-inch diskette formatted in this way contains 720 sectors per side, with 512 bytes per sector. The total diskette capacity is then 360K for single-sided diskettes and drives and 720K for the more common double-sided diskettes and drives.

Because Atari ST-series drives use the same format as the IBM PC 3.5-inch drives do, they can exchange *data* diskettes without any particular problems (you can't actually use PC *application* programs on the Atari, however, because the two machines use different processors and operating systems). Some forms of copy protection on each machine can give the other one trouble if you're trying to read in protected programs as data.

David Small, an Atari developer, describes two promising possibilities for Mac-to-Atari diskette interchange. One approach might be to connect a 3.5-inch drive to one of the Atari's fast serial ports, read in all the bits from the diskette, and let a software routine sort out which bits are which. Such a method would let you read from and write to data diskettes without any special preprocessing.

For the moment, however, Small has a less automatic interim solution.

WANT MORE INFORMATION ON A PRODUCT YOU READ ABOUT IN THIS ISSUE?

For further information on any product you read about or saw advertised in this issue of A+, find the Reader Service Number on the bottom of the page and return the Reader Service Card found in the back of this issue.

By tweaking the disk-drive parameters on the Atari so the disk drive uses 10 sectors per track instead of 9, he gets the same 800 logical sectors of 512 bytes per side that the Mac's drive does, although this method uses MFM and constant speed instead of GCR and a variable rate. Although diskettes can't actually be interchanged, if you use a telecommunications link to convey the information, the diskettes look logically identical, so programs that read and write through the low-level DOS routines on each machine can operate the same way without having to treat the diskettes differently.

The Amiga disk-drive design is somewhat Macintosh-like, in that it uses a spare area on one of its custom chips, along with some software, to do the basic low-level diskette reading and writing. Thus, in theory, the Amiga can be almost completely flexible about encoding, sectoring, and logical formatting.

The Amiga normally formats diskettes with one *physical* sector per track, with each physical sector broken up into 11 logical sectors. When an Amiga wants to read from or write to a logical sector, it reads from or writes to an entire track and does the data extraction or replacement in software.

With 11 logical sectors of 512 bytes each and 80 tracks, an Amiga double-sided diskette packs 880K, even more than what Apple gets with the variable-speed mechanism. The Amiga can't currently read the Mac or UniDisk formats, however, because there is no way to tell its drive how to vary in speed like the Mac's does.

I'm a fervent believer in personal computers as tools rather than religions.

There's hope, though, according to developer Dan Moore of Littleton, Colorado. People have already been figuring out how to use the Amiga's flexibility and direct access to pulse-level information to allow the computer to duplicate a wide range of foreign-format diskettes, so the ability to read Apple's formats may not be that far off.

A side note: The Amiga can now read Atari diskettes without any problem by using the Sidecar attachment meant to allow the machine to run PC-DOS programs. Although only certain DOS versions seem to work with the Amiga (such as those formatted for the Data General laptop), the data-exchange routines developed for PC diskettes work with the Atari diskettes.

I find it astounding that Apple and other major personal-computer firms still don't realize that most users want to work with people who may have different machines, rather than spending their time crowing about the technical superiority of their particular choice. To most of us, the ability to use our computer to read diskettes from anybody in the office is more important than a diskette with 40K more storage space.

At a minimum, every Mac and UniDisk should come with a program that lets them read diskettes from the other machine, and Apple should long ago have released an inexpensive peripheral to read from and write to PC-style diskettes. Rumors that some of these projects are in the works have been around for years.

Fortunately, personal computers unleash personal creativity. Just as in the CP/M community, in which half a dozen small firms developed programs to let one manufacturer's machines read another's diskette formats, in the Apple, Amiga, Atari, and PC worlds, a growing number of disk-drive engineers are zeroing in on easy diskette interchange.

As you may have noticed if you read this column regularly, I'm a fervent believer in personal computers as tools rather than religions and in the virtues of easy information exchange. Better access to disparate diskettes and computers represents an opportunity for us as Apple users, not a fall from grace and the one true path. Extra barriers do more to shut us out from the world than than they do to fortify our position. There's too much good stuff out there to miss. ✚

Zimco International

85-39 213th Street, Queens Village, NY 11427

(800) 227-6647

NY Call (718) 479-7888

DRIVES

Bernoulli Box (Mac)	$1450
Corvus Hard Drive	call
Disk Drive — One Year Warranty	$ 155
Disk Drive Controller (Apple)	$ 30
Habba (Mac)	$ 279
Quark 10 Meg Hard Drive (Apple)	**$ 999**
Quark 20 Meg Hard Drive (Apple)	$1350
Tymac 3.5" Drive	$279

PRINTERS:

Brother HR-15	$335
Citizen 120D	$179
Citizen MSP 10	$240
Daisywriter 2000	$735
Epson FX-85	$359
Epson LX-90 w/pic	$245
Epson 286	$499
Epson AP-80	$280
NEC Pinwriter P2*	$425
Okimate 20*	$125
Okidata 192p	$339
Okidata 193	$455
Qume Letter Pro 20	$430
Qume Sprint 1400*	$899
Panasonic KXP-1091	$229
Panasonic KXP-1092	$330
Panasonic KXP-1592	$460
Silver Reed EXP-800	$649
Star SG-10	$219

*requires interface

SUPPLIES:

Centronics Parallel Cable	$21
Disk Notcher	$ 5
Laser Edge 20 lb. Paper (1000)	$19
Maxell MDI	$15
Maxell MDII	$19
RS232 Cable	$21
64K Chips (8)	$14

SOFTWARE

Beagle Bros. Mini-Pix Disk #1	$17
Fontrix	$59
Graphics Department	$66
Newsroom	$33
Newsroom Clip Art Collection	$16
Print Shop	$28
Print Shop Graphics Libraries	$15
Print Shop Companion	$23
Sensible Grammer	$52
Sensible Speller Pro-Dos	$66
Typing Tutor III	$31

MONITORS

Amdek 300 Green	$116
Amdek 310 IBM Amber	$142
Amdek 600 Color RGB	$375
Amdek 722 Color	$489
NEC Amber	**$ 89**
Panasonic DTH-103	$389
Princeton HX-12 RGB	$430
Princeton MAX-12 Amber	$168
Sakata SC-100 Color	$149

Applied Eng. Ram Works II 512k $199

Half Height Disk Drive Apple II Series $125

MODEMS

Anchor Express 300/1200	$239
Anchor Volksmodem 300	$ 49
Hayes Micromodem IIe	$128
Hayes Smartmodem 300 (IIc)	$152
Hayes Smartmodem 1200	$359
Hayes Smartmodem 1200B	$325
Hayes 2400	$559
Novation Applecat II	$187
Novation Applecat 212 system	$353
Novation Applecat 212 upgrade	$214
Prometheus Pro-Modem	$290
Prometheus Pro-Modem 1200A	$265
1200 Baud (Hayes)	$250
U.S. Robotics 1200	$235
U.S. Robotics 2400	$440

APPLE ACCESSORIES:

A+ Mouse (IIc. Mac)	$ 65
Appliend Eng. Music Synthesizer	$120
Applied Eng. Ram Works II 256k	$189
Applied Eng. Ram Works 1 meg	call
Applied Eng. RGB Option	$ 99
Applied Eng. Timemaster	$ 95
Applied Eng. Viewmaster	$ 95
Applied Eng. ZRAM w/512k	$349
AST Multi I/O (IIe)	$149
CH Mach III Joystick	$ 33
Coolingfan	$ 24
80 Column Card (II+)	$ 60
80 Column Card w/Softswitch	$70
Ext. 80 Column Card (64k, //e)	$ 59
Graphics Printer Card	$ 55
Pico Joystick	$ 25
Kensington System Saver	$ 59
Koala Pad Plus	$ 78
Kraft Joystick	$ 33
Mockingboard A,B,C,D	call
O.M. Bufferboard for Grappler+	$ 60
O.M. Grappler +	$ 73
O.M. Grappler +, Buffered	$133
O.M. Grappler +, Serial	$ 73
O.M. Grappler +, IIc	$ 79
O.M. Hotlink	$ 45
Power Strip	$ 12
Printer Interface Parallel	$ 40
Quadram Clock Calander	$ 60
16k Ram Card	$ 35
Super Serial Card	$ 69
Thunderclock	$104
Video7 Slot 7	$100

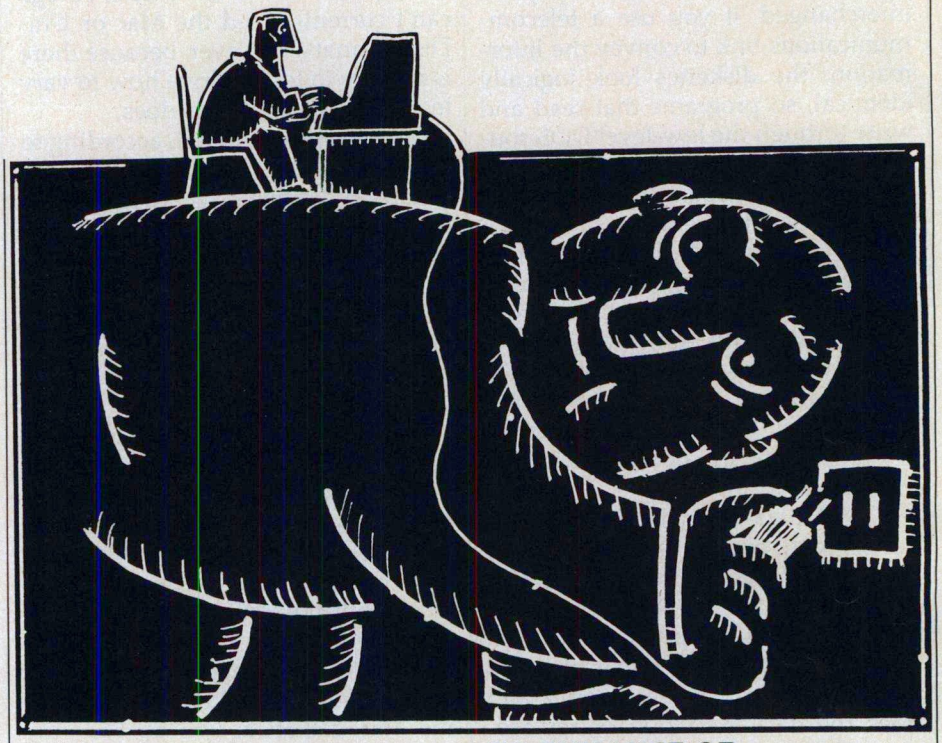
FREE SHIPPING (on prepaid orders)

Terms: Any order may be returned within 30 days for a full credit subject to a 15% restocking fee. All prices reflect a 3% cash discount. NYS residents add 8.25% sales tax. Personal/corporate checks, allow 2 weeks to clear. All returns require a return authorization number. Computer sales are not subject to free shipping. MC and VISA do not qualify as prepaid orders. Purchase orders are accepted. Prices are subject to change without notice. We are not responsible for typographical errors.

CIRCLE 126 ON READER SERVICE CARD

Rescue Squad

BY GARY B. LITTLE AND CHRIS VAN BUREN



CUSTOM DEVICE-CONTROLLER PROGRAM

Q. *I'm a hardware designer, and I want to build a custom peripheral card for the IIe. My main stumbling block is in figuring out how to write the device-controller program to be stored in the ROM on the card. Do you have any suggestions for writing such programs?*

A. Before you start writing your code, make sure your card adheres to certain Apple conventions.

First, the I/O memory locations for controlling the device must be $C080+n0 to $C08F+n0, where *n* is the number of the slot into which the card has been placed.

Second, the ROM on the card must occupy the address range $Cn00 to $CnFF (called the peripheral-card ROM space). This ROM contains the drivers for communicating with your device. Optionally, you can share the space from $C800 to $CFFF (called the peripheral-card expansion ROM) with other peripheral cards; if you do, design your circuitry so that any access of location $CFFF will disable that space and so that any subsequent use of the peripheral-card ROM space will activate it. That way, you will avoid the intolerable situation of having several cards using the same address space simultaneously.

The program you write for the peripheral-card ROM must be relocatable, since users must be able to use the card in any slot. Relocatable programs are those that can run at any position in memory, so they can't use absolute JMP (jump) and JSR (jump to subroutine) instructions or read data from locations within the ROM space. For scratch-pad data storage you can use locations $478+n, $4F8+n, $578+n, $5F8+n, $678+n, $6F8+n, $778+n, or $7F8+n.

For the card to work properly with Applesoft and Pascal programs, your ROM program has to include certain identification bytes. The operating system examines them to determine what type of card is in a slot. The Pascal protocol also dictates that you include a seven-byte table, beginning at $Cn0D, containing the offsets (from $Cn00) of certain fundamental I/O subroutines: Initialize, Input, Output, Status, Control, and Interrupt. By including this table, you let programmers use your card without having to worry about the details of the specific hardware design.

How do I build a custom peripheral card for the IIe?

You can find more information on how to build your hardware device and write software for it in Apple's publication *Apple IIe Design Guidelines*.

You will find a summary of the software guidelines in chapter 11 of *Inside the Apple //e* (Brady Communications, 1985). —*GBL*

TO ENHANCE OR NOT TO ENHANCE

Q. *I own an Apple IIe and have been considering getting the enhancement. My computer dealer tells me that doing so will mean that some of my programs will no longer work on the computer. At the same time, however, he seems unable to tell me which ones or how to discern which. Can you shed any further light on this? The reason for my interest is that I have heard rumors of a new AppleWorks that will work with the mouse, have windows, etc. Are you aware of this new version and when it might be released?*

A. The new ROMs in the enhanced IIe contain the MouseText characters that developers can use—along with Apple's guidelines—to create a standard graphic interface for their programs. The only incompatibility between the old and new ROMs is that the MouseText characters replaced a set of reverse-video characters. Apple Computer supposedly encouraged developers to use another means of obtaining reverse video in their programs.

Unfortunately, some developers used the doomed characters, and

ILLUSTRATION BY MACIEK ALBRECHT

their programs, when you use them with the enhanced IIe, display strange-looking shapes where the reversed characters are supposed to be (see "A Close Look at Recent IIe Enhancements" in the August 1985 issue of *A+*).

Most developers have upgraded their programs for the new ROMs, but you might find some stragglers. If a program was written or upgraded before April 1985, when the enhancement kit was announced, it might have compatibility problems.

Regarding a mouse-based AppleWorks, all information at this point is based on speculation—Apple has not officially announced a new version as of press time for this issue. The most recent rumors say that Apple and Rupert Lissner, creator of AppleWorks, have not exactly seen eye-to-eye on the mouse-based AppleWorks project. Apple might not publish the program at all. Of course, if the program is almost ready, Lissner might just sell it to another publisher.

International Solutions of Sunnyvale, California, is a likely candidate for publishing this kind of program. The company currently publishes stand-alone applications that use the mouse.

Only time will tell whether any AppleWorks-like program published outside of Apple will be compatible with the existing AppleWorks.—*CVB*

SPEEDING GARBAGE COLLECTION

Q. *I've read that the "garbage collection" command, FRE(0), is much faster under ProDOS than it was under DOS 3.3. I've written a very nice ProDOS data-entry routine that is string-intensive, and I still find that my X=FRE(0) command takes a long time to complete. What gives?*

A. Under ProDOS, two garbage-collection commands are actually available. One is the Applesoft X=FRE(0) command, and the other is the ProDOS PRINT CHR$(4);"FRE(0)" command.

The Applesoft command is the slow one, and it is the one you're using in your program. If you substitute the ProDOS version, you will notice a dramatic speed increase.—*GBL* ✚

Please send your questions and problems to Rescue Squad, A+, 11 Davis Drive, Belmont, CA 94002.

DID YOU KNOW

A+ readers participate in one of the biggest events in Apple Computing every year? They select The Best Software Of The Year every October. Look for *your* A+ Readers' Choice Software ballot in the October issue and choose the Best Software of the Year!

Subscribe to PC Magazine and save 65%

You'll receive in-depth and comprehensive product evaluations and comparative hardware and software evaluations from PC Labs, the publishing industry's *only* testing laboratory.

You'll receive new applications, power tips and special reports designed to add more power and flexibility to your IBM/MS DOS-standard system.

And you'll network with other users and discover routines and techniques that can save you time and money.

Subscribe to *PC Magazine* today! Send the coupon to: *PC Magazine* · P.O. Box 2443 · Boulder, Colorado 80322 *or call Toll-Free; 1-800-852-5200 now!*

Yes, send me PC Magazine for:

☐ 22 issues (one year) for $24.97. Save 62%!

☐ 44 issues for only $44.97. Save 65%!

Savings based on annual single-copy price of $64.90.

MR./MRS./MS. PLEASE PRINT FULL NAME

COMPANY

ADDRESS

CITY

STATE ZIP 8ZD58

Add $15 per year for postage outside USA, US currency only. Please allow up to 60 days for delivery of first issue. Basic annual subscription price is $34.97.

A+ DIRECTORY

ADVERTISING RATES AND INFORMATION

Standard listings consist of a bold lead line (25 characters maximum); 7 lines of body copy (45 characters per line); 4 lines for company name, address and telephone number, $245 per insertion—3 issue minimum. Additional charge for extra lines and company logos. Prepayment and frequency discounts available. American Express, MasterCard, Visa accepted. Copy subject to publishers approval. Send typewritten or printed copy, reproducible logo art (if applicable) and remittance to Kathryn Cumberlander, Classified Sales Manager, Ziff-Davis Publishing Company, One Park Avenue, New York NY 10016. For additional information, assistance, or to place an order by phone, call collect (212) 503-5115.

▸ACCESSORIES/ SUPPLIES

DISCOUNT PRICES!

5¼ Disks: 10 for $5.50, 100 for $50.00, 1000 for $400.00. Modems: Novation, Hayes, Smarteam. Apple IIe professional for $1199.00. Apple IIc for $749.00. Printers: Star, Epson, Okidata, Panasonic, call for prices. Imagewriter ribbons: 6 for $22. Monitors. Software always discounted 30%.
Sy Draft
26130 Greenfield Avenue
Oak Park, MI 48237
1(800) 321-2695/(313) 968-2620

▸MISCELLANEOUS/ ACCESSORIES SUPPLIES

DUST COVERS WITH GUARANTEE

Vinyl dust covers lint free & water resistant Apple II or IIe $7.50 Apple IIc, Scribe Printer or Imagewriter reg. carriage $8.50 Apple IIc disk drive $7.50 Apple IIe monitor on CPU $16.00 & many more. Colors: blk., brwn., base, tan, white. S.A.S.E. for more info. Add $2. s/h. Chk/MO/VISA/Mastercard accepted.
J/Check Software
P.O. Box 345
Millry, AL 36558
(205) 846-2360

▸COMPUTER INSURANCE

SURE IT'S INSURED?

If your computer is important to you, insure it! SAFEWARE provides full replacement of hardware, media and purchased software. As little as $39 a year covers fire, theft, power surges, earthquake, water damage, auto accident. Call 8am to 8pm Mon. thru Fri. Sat. 9am to 5pm.
SAFEWARE. The Insurance Agency Inc.
2929 North High Street/P.O. Box 02211
Columbus, OH 43202
800/848-3469 (Nat); 614/262-0559 (OH)

▸APPLE III

APPLE IIIs BEST FRIEND!

Pure and simple, no doubt about it, ON THREE is the best friend your Apple III will ever have. Other companies may sell programs that were developed years ago but ON THREE creates exciting NEW products for the III. Read about the Desktop Manager with Mac-like utilities, the 512K memory expansion upgrade, Draw On III Graphics and more in ON THREE magazine, the reference source for Apple III users. 12 big issues only $40. Call Toll Free & charge to VISA, MC, AE. You'll be glad you did! FREE catalog. Questions? Call (805) 644-3514.
ON THREE, Inc.
4478 Market St.—Dept. A.—Suite 701-702
Ventura, CA 93003
ORDERS ONLY 1-800-443-8877

▸COMPUTER TRAINING

TYPE 'N WRITE

Teach the whole family from novice to expert. Speed, accuracy, and record keeping. School tested for two years and now available for home use. Send $19.95 for two disks and Student Guide. All Apple IIs, but IIe or IIc needed for full word processing. $55.50 for class 10 pack. M/C, Visa, P.O.
Computer Tutor Inc.
Box 12756
St. Louis, Mo. 63141
(314)-966-7370 (8 a.m.-5 p.m. CST)

▸HARDWARE/ADD ON BOARDS

FREE DISK NOTCHER, CAT

alog and shipping with order. Our Z80 CP/M card ($39 no software) gives you access to a vast quantity of software. Our RS232 super serial card ($69, manual & cable) interfaces with printers, modems, etc. 30 day return. 1 yr warranty. Quality Products! Terrific Prices! Free Expanded Catalog! Order Now!!!!!!!
Dasietronics
P.O. BOX 51
Rexford, New York 12148
Ph 518-877-7302

CIRTECH FLIPSTER

Liquidation sale: 1 Ramcard (Flipster). Regular $399, sale price $299.
- DOS 3.3, PRODOS, Pascal, CPM compatible.
- 1012K Appleworks Desktop
- Partitioning
- Install in any standard slot of Apple II or Franklin Ace 1000, 2000
- Free Appleworks Autoload software included.

For more information call (612) 546-5353. Orders call Toll-free.
Ampro, Ltd.
755 Florida Avenue South
Minneapolis, MN 55426
800-828-3399

B.Y.T.E. RAMcard

MEMORY expansion card to upgrade your Apple IIe to 192K, 80 column, Apple modes 100% compatibility, Ram Disk utilities for DOS, PRODOS, PASCAL, & Appleworks V 1.1 desktop expander to 101K. 1 yr. warranty ... U.S. $99.00
Your nearest dealer or direct from:
B.Y.T.E. (613) 726-9350
Suite 410, 301 Moodie Dr.,
Nepean, Ont. K2H 9C4 Canada
(Dealers enquiries welcomed)

▸HARDWARE/ COMMUNICATIONS

CABLE TV

Jerrold equipment, model numbers DRZIN, DRZD, DRZID, and more. SB-3, Oak VN-12 and M35-B, Zenith Z-Tac, also scientific atlanta models 8500, 8550. All products enable you to pick up most cable stations. Best prices around! For information, send $1.00 plus SASE or call (312) 434-6788
Swensons Electronics
6839 So. Maplewood
Chicago, IL 60629
NO ILLINOIS ORDERS ACCEPTED

▸HARDWARE/ PERIPHERALS

MORE THAN A JOYSTICK

State-of-the-art has never performed so well. The GRAVIS MK VI Analog Controller for your Apple.
- Pistol Grip Handle
- 8 Position Tension Control
- 3 Independent Fire Buttons
- 1 Year Warranty
- Available for MacIntosh as well.

Only $49.95 + $5 S/H. Dealer Inquiries
Gravis Computer Technologies, Inc.
943 Boblett
Blaine, Washington 98230
604 434-7274 ext. 22

MOUSETRACER

Use your Mac, IIe, of IIc mouse and draw like the pros! Put cartoons, pictures, maps, etc. on the drawing board. Strap your mouse to the Mousetracer and with your favorite graphics program trace the picture of your choice. Works like a 1:1 drafting board pantograph. Send $34.95 + $3 UPS shipping (CA res add $2.10 sales tax) to:
BRIMARK INNOVATIONS
9821 Yolanda Ave.
Northridge, CA 91324

▸SOFTWARE/ ACCOUNTING

APPLE IIe VERTICAL MARKET

Video Rental System	Hotel/Motel System
Auto Parts Store	Point of Sales
Restaurant Payroll	Job Costing
Certified Payroll	Florist Invoicing

Multi-user systems. Optional bar code reader & cash draw available plus optional integration into a full accounting system.
West Ware Inc.
65 E. 400 South
Orem, UT 84058
(801) 226-8926

▸SOFTWARE/ BUSINESS

APPLEWORKS FINANCE FILES

Nineteen Business Finance Files, incl. balance sheet-inventory control-breakeven/price break analysis-EOQ/ROP-queues-depreciation—$25.95. Thirteen Personal Finance Files, incl. checkbook monthly budget-mortgage-annuity-loan—$19.95. Excellent detailed book included with each disk. Post paid U.S., CALIF. res. add 6%. Req: Apple II e,c and Appleworks
Practical Computer Applications
2323 Tucker Ct.
Santa Rosa, CA 95401-2374

A+ DIRECTORY

DATABASE AND ACCOUNTING

Apollo Database and Apollo Accountant sell in stores for $120 each. Your Cost: $60 Each !!! (Both for $99!). Highest Rating of any database package given by Creative Computing. Combines filing and spreadsheet; 50X Faster than Appleworks! Apollo Accountant allows unlimited transactions, accounts, categories.
Schmidt Enterprises
7448 Newcastle Ave
Reseda CA 91335
(818) 342-5930; Outside CA: 800 232-6777

SOFTWARE/ BUSINESS PROJECT MANAGEMENT

EVERYBODY'S PLANNER

The Planning Tool for the Rest of Us. Project Management & Flowcharts made easy. PERT charts W/54 tasks, critical path, 216 resources, early-late, start & finish dates. 7 reports, optional costing. Infinite Activated flowcharts, 20 shapes-9sizes, 3 fonts. 64K Apple, IBM $99.95+ $s/h. VISA/ck.
Abracadata, Ltd.
P.O. Box 2352-A
Eugene, OR 97402
503-342-3030

SOFTWARE/ EDUCATIONAL

GRADE MASTER

Choice of educators everywhere!! A fast efficient "professional" grade management system for K-College teachers. Easy grade entry/change, flexible set-up, professional reports on screen or printer. Brochure, review, and user comments on request. Demo disk $5. Apple II+/e/c & IBM. $79+$4 s/h TX 5.125% tax. VISA MC.
ENCODE (formerly Micro-Vision)
PO BOX 5070
Klingwood, TX 77325
(713) 358-6687

SOFTWARE/ ENTERTAINMENT

KNIGHTS OF WIZARDRY!

Frustrated? Rookies and skilled players alike win with our system. Fully detailed maps containing all notes and information needed. $6.00 each scenario. Master manual has secret tricks and step-by-step guidance to conquer all three scenarios, only $15.00. All for only $25.00.
MASTER MAZE SYSTEMS
P.O. Box 12867 Dept A+
Gastonia, NC 28053-6867
(704) 866-0579

SOFTWARE/ GENERAL

DESIGN YOUR OWN LABELS!

Use PRO LABEL to design & print multi-purpose labels for office, shop, lab, and home. Name badges, disk labels, parts ID stickers, mail labels, & more. Set size, design label, then print 1 to 1000. Intermix variable and fixed fields & fill in changeable data when printing. Do serial numbers & date stamping. Use our 20 pre-designed formats or make new ones. 100 labels, pgm, manual: $19.95 + $1 shpg. 128K IIe/IIc & all printers. Free Fact Sheet.
MICRO DATA SERVICES
P.O. Box 631
Marshalltown, IA 50158
1-800-634-5463, IA 800-542-7981

SOFTWARE/ GRAPHICS

PRINT SHOP USERS CLUB

We help you get the most of Print Shop! The $30.00 membership fee includes: 1200+ Graphics on 6 disks, a Utilities disk, and one issue of the club newsletter-Update Disk (with articles and 100+ more graphics). Additional 3 issues of the Updated Disk—$25.00 Send (Check/MO/Visa/MC) or a SASE for graphics list to:
Print Shop Users Club
Box 216
Mercer Island, WA 98040
(206) 232-8272

SOFTWARE/ PERSONAL

KITCHEN PLANNER

Create a 1-14 day Menu and Shopping List in less than 5 min. The only program available which both composes balanced meals and lets you change them! It's also the fastest and easiest to use. Compact, useable printout. To order send $29.95 + $1.50 (handling) or call with VISA/MC. All Apple II's. CA add 6½%.
SAV-SOFT PRODUCTS
P.O. Box 24898
San Jose, Calif. 95154
(408) 978-1048

SOFTWARE/ REAL ESTATE

ELECTRONIC HUD SETTLEMENT

Appleworks or Supercalc 3a template calculates cash required from purchaser and cash payable to seller of Real Estate. Sales prices to $999,000. Prints page 1 & page 2 of HUD form and a cash in and out check. Template requires 128K RAM. RELEASED.7/85 ... PRICE $55 Lotus 1-2-3- version $95.
WEBER ABSTRACT
Suite 820 One Oxford Valley
Langhorne, PA 19047
(215) 750-7550

SOFTWARE/ SCIENTIFIC

STATISTICS CATALOG!

If you need statistics for Apple II, II+, IIe or IIc, call us. Our catalog contains professional programs for: general statistics, high level Anova, multiple regression quality control, and associated graphics. Write or call now for a free catalog of quality statistics software.
HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324
1-800-451-3030, 1-818-993-8536 in CA

SOFTWARE/ SPREADSHEET

APPLEWORKS SUPER GRAB BAG

Why pay more but get less? Get SUPER GRAB BAG of professional-quality AppleWorks or SuperCalc3a spreadsheet templates and forms: Taxes, Buying a House or Income Property, College Fund, Shopping/Camping Lists, Expert System, more. Easy to customize. Save hours, learn techniques. $12 plus $2 S/H. WI add 5%. MC/VISA.
PETE PETIT/SUPER GRAB BAG
1344 N. 31st St.
Milwaukee, WI 53208
414-933-4627

SOFTWARE/ STATISTICS

ELF, THE STATISTICAL PACKAGE

Interfaces with Visi-Calc files or creates its own. Unlimited observations, 250 variables in database. Factor Analysis, Stepwise Regression, Discriminant Analysis, 1&2 way ANOVA, Crosstabs, Correlations, t-Test, Transformations, more. All New and improved Manual. $350+ discounts. Call more!
The Winchendon Group, Inc.
P.O. Box 10339
Alexandria, VA 22310
(703) 960-2587

SOFTWARE/ STOCK ANALYSIS

STOCK MARKET STRATEGY

Charts and Reports for up to 50 stocks per disk. When and Amount to Buy or Sell. List and Copy all programs. Manual and 2 Disks $49.95. Demo Disk $10.00 Refunded with purchase of program. 1 or 2 Drives. 11, +, C, E. Adaptable to other systems. Copy protection and Customization free on request. Allow 14 days delivery.
R.O. Keen, KeenTECH Software
8340 Addison Dr. S.E.
Calgary T2H 1P1
Alberta, Canada.

SOFTWARE/ UTILITIES

FREE PASCAL NEWSLETTER

Interested in Apple Pascal? Send your name and address for a free one year subscription to our newsletter/catalog. Includes tips, news, and information about the world of Apple Pascal. Also included is a catalog of Pascal programs and utilities. Most programs and utilities have an average price of less than $10 and include full source code.
Palos Computer Concepts
PO Box 560
Palos Park, IL 60464

PFS FILE USERS

The "BRIDGE" gives you the ability to extract data from PFS FILE™ to either an ASCII, text file or a DIF FILE. Extracted data can be used with word processors, spreadsheets, for conversion to other data bases (Appleworks™), or for transmission to other computers. All APPLE II's. $59.95.
SUN MICROSYSTEMS, INC.
P.O. Box 1388
Ft. Lauderdale, FL 33302
(305) 486-6115

PRODOS FOR STARFIRES

Attention Corona Starfire users you can now add a ProDos software driver to your Corona Hard Drive. You know how convenient and user-friendly your Corona Hard Disk is. Take advantage of the power of ProDos and the convenience of the Corona Hard Drive. For Apple II+/e w/min 64K. $49.95+$3.s/h
Law Industries
3387 W. Corning St.
New Bury Park, CA 91320
(805) 498-8268 (evenings/weekends)

CAPE COD CONVERTIBLE

Converts BASIC programs (end manual edit)
APPLESOFT from/to IBM-PC BASIC
APPLESOFT from/to APPLE CP/M
APPLE CP/M from/to IBM-PC BASIC
One-way $150. Round trip $225. Other utilities included are: string search, list program variables, text file comparison.
CAPE COD SOFTWARE,.INC.
POB 654
North Eastham, MA 02651
(617) 255-9537

▸SOFTWARE/ STRATEGIC GAMES

BARD'S TALE PLAYERS!

EDITOR and HINTBOOK for Bard's Tale Editor allows you to change name, class, race, exp. gold. Bring the dead back to life. Put hit and spell points to 65000! Strength to 31! Have warriors cast spells! Hintbook has hints and maps for all dungeons (20 pages). Editor $15.95. Hintbook $9.95. Visa/MC, ck/mo + $2.00 s/h.
S&D Software
P.O. Box 223458
Carmel, CA 93922 (408) 649-5592

▸SW/WORD PROCESSING

APPLEWRITER ENHANCER IIE

Bring out the full potential of Applewriter! Applewriter Enhancer is a collection of POWERFUL WPL programs designed for a small office. Many simplified features: All DOS/LOAD commands from convenient SCROLLABLE CATALOG; AUTOPRINTING; Limited CALCULATOR; CHRONOLOGICAL File; FORM Letters; and more. Just $29.95, DOS 3.3 or ProDos.
MIC
Route 1, Box 235-A
Kent, CT 06757

▸USED EQUIPMENT

USED COMPUTER PRODUCTS

National Listing Service. Buy or sell used products directly from 1000 now listed. It's easy. Our Price Estimating and Mailing services can help you. SAVE MONEY. Is it worth paying more for new? NO CHARGE for Buying. NO RISK for Sellers—6% fee when sold ($20 min., 3% over $5000). Any product over $100. Use a touch-tone phone if you can. If you do, we are open 24 hours every day.
Comp-Used
203-762-8677

APPLE(II+)WORKS

PLUS-WORKS™

It Really Works!!

PLUS-WORKS not only allows you to have all features of AppleWorks™ on an Apple II™, II+ or compatible, but our extended memory versions give you capabilities far beyond the standard IIe/c versions. Its great for expansion on the **Apple IIe** as well.

Compare these features with other AppleWorks patch programs

- Copyable - make backups, transfer to hard disk
- Up to 1 megabyte of **desktop** space available
- Database expansion to more than 4,200 records
- All control codes available to printer
- Supports Franklin computers and all full ASCII keyboards
- Supports all major 80 column cards
- Permanent and dynamic ram disk features
- All versions of AppleWorks supported, even V1.3
- Expand AppleWorks desktop into CP/M ram cards
- Optional patch to help with printer problems

•**PLUS-WORKS** - $19.95 plus $3.00 ship/hand. Requires AppleWorks, 64K Apple II+ or compat, 80 col card and shift key mod. Maximum desktop 10K. You may upgrade to XM for $30.00 at any time.
•**PLUS-WORKS-XM** - $49.95 plus $3.00 ship/hand. Requires same as above with legend, saturn, or compatible ram card(A.P.P.L.E. Big board, know Drive, prometheus, etc), Apple Computer's memory expansion card, Microtek ram card, Orbital disco-ram, PCPI Applicard, Micropro Star card, IBS AP33 ram card, or Apple IIe with ramcard.
•**PLUS-WORKS-XMB**-Special version for Basis 108, $49.95 plus $3.00 ship/hand
•**PLUS-WORKS-L** - Special version for Laser 3000, 10K desktop - $19.95 plus $3.00 ship/hand.
•**Special combination offer - PLUS-WORKS-XM & 256K Apple Memory expansion card (expandable to 1 megabyte) - $295.00**

MC/Visa add 4% **Orders only 1-800-221-3826**
Information, Alaska & New Jersey residents call **516-922-9584**
or send check or money order to:

Norwich Data Services
PO Box 356
East Norwich, NY 11732-0356
NYS residents add appropriate sales tax
Dealer inquiries invited
Apple & AppleWorks are trademarks of Apple Computer Inc.
PLUS-WORKS *is a trademark of Norwich Data Services Ltd.*

$5 TALKING DISK

OVER 100 WORDS in vocabularies that you can put into your own programs! No extra hardware required. Sample programs include:

- Talking four-function calculator — choose English, Spanish, or German.
- Talking keyboard — letters and punctuation in English.
- Demonstration of voice editing.

The $5 Talking Disk is available for Commodore 64, 128, Atari 800, 800XL, 130XE, and Apple II+ (64K), IIe, and IIc.

If you want to make your own vocabularies, in any language or accent, then you must have a VOICE MASTER for processing speech input. VOICE MASTER lets you do much more: YOU CAN RECOGNIZE SPOKEN COMMANDS and WRITE MUSIC AS YOU HUM! And affordable too — under $90 including the headset and microphone.

Send $5 for the talking disk. Prepaid orders only. Includes postage. ($7 outside USA, Canada, and Mexico.) Information on VOICE MASTER will accompany your disk. Or you can call or write for VOICE MASTER information separately. Please specify computer make and model with your order.

COVOX INC.
675 Conger St., Dept. A
Eugene, OR 97402
Telephone (503) 342-1271

CIRCLE 101 ON READER SERVICE CARD

A+ MART

SUPER INDEX

POWERFUL DATABASE on a disk summarizes every article, review, program, letter & tip in A+ Magazine.

Cross-references corrections & updates.

Ends searches thru stacks of magazines

A **"tip-book"** citing 1000's of solutions.

Like owning a **"helpline"** for little more than the price of a single long-distance phone call!

GUARANTEED to save you TIME and MONEY.

$5 for 1985, $9 for 1983 thru 1985

FASTFIND Not Copy-Protected

High-speed search utility. Searches any 100 sector text file in 1 second. Loads them in 6 seconds. AND/OR/NOT logical operators & wild card. Searches multiple files & disks with single keypress. Up to 100 times FASTER than word processors! Finds *lost files*, even if you forget their names! A.P.P.L.E.'s BEST SELLER. Bonus super-fast, hard disk compatible SPEEDOS. Prints reports. Any APPLE II or III. List $29.95

$12 & get '83 thru '85 INDEXES FREE

(Add: $2 Ship/hand., CAL resid. 6.5%, credit cards 4%, overseas $3)
FASTFIND CO., 28503 Coveridge Dr. #A, RPV, CA 90274
[Modem: 213/377-0804] **VISA/MC 213/544-2350**

CIRCLE 600 ON READER SERVICE CARD

Nashua Diskettes

5¼" DS/DD with hub ring and sleeve, factory warranteed, packaged in 50's. Shipping Extra. Quantity 50, 85¢ each.

SUMMER SPECIAL!!

Order 100 or more disks before Sept. 30, 1986 and WE'LL PAY THE SHIPPING. Just mention this ad when you place your order and receive FREE SHIPPING.

75¢ each Qty. 100

(Offer not valid in conjunction with any other offer).

We sell 3½" & 5¼" disks—all types, major brands. Call toll free:

1-800-321-4668
in Colorado, 303-234-0871

VISA, MASTERCARD, OR COD ACCEPTED

ALF 1315-F Nelson St. Denver, CO 80215

TERMINAL EMULATION

Softerm 2 emulates over 24 popular terminals including the:

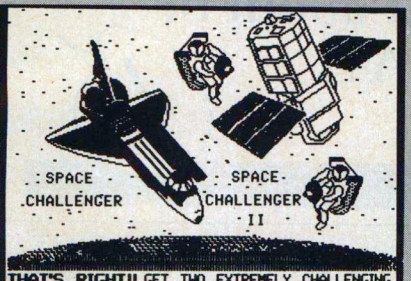
- DEC VT52, VT100, VT102
- Data General D200
- IBM 3101-20 (block mode)
- Hewlett-Packard 2622A
- Honeywell VIP7801, VIP7803

Guaranteed Compatibility

Call for free product brief
$195 MC-VISA-COD
For the Apple II, II+, IIe, IIc and compatibles

SOFTRONICS
7899 Lexington Dr., Ste 210
Colorado Springs, CO 80918
(303) 593-9540

CIRCLE 601 ON READER SERVICE CARD



THAT'S RIGHT!! GET TWO EXTREMELY CHALLENGING GAMES FOR HALF THE PRICE OF JUST ONE. PLAY ALONE OR PLAY WITH A GROUP OF UP TO FOUR FOR SOME REAL COMPETITIVE FUN. MANY★MANY HOURS OF ENJOYMENT FOR THE KIDS AND THE ENTIRE FAMILY.
<<< $13.95 >>>

LODE RUNNER III: 150 NEW CHALLENGING DATA DISK LODE RUNNER LEVELS FOR THE KIDS TO CONQUER. INCREDIBLY LOW PRICE OF ONLY...
<<< $8.95 >>>

BUY BOTH PACKAGES AVAILABLE FOR APPLE COMPUTERS FOR ONLY **<< $19.95 >>**

ORDER NOW: SEND CHECK OR MONEY ORDER TO
CHIC
4002 WEST WEAVER RD. DEPT 'A'
HAMPTON, VIRGINIA 23666
(804) 827-8243

(VA RESIDENTS ADD 4% SALES TAX.)

CIRCLE 602 ON READER SERVICE CARD

ComputerEyes™

CALL TOLL FREE
1 (800) 523-2445, x48
In PA (800) 346-7511, x48

- Make Custom T-SHIRTS
- Take Computer Portraits
- Interface to *ANY* Standard Video Source (ex. VCR, Video Camera, etc.)

Computer Eyes™	
For APPLE (II, II+, IIe, IIc)	**$109.00**
Software interface to:	
Print Shop	12.00
Double Hi-RES (IIe)	12.00
Newsroom	12.00
Panasonic/Ikegami Commercial grade B/W video camera	**159.00**
Special Hook-up cabling with instructions	19.00
UNDERWARE ribbons to make custom heat iron-on transfers for T-Shirts, scarves, etc.	12.00
Color Pens	12.00

Also Available for ATARI, C-64 and IBM

HAL Systems, PO Box 293,
Scotch Plains, N.J. 07076
*** * * DEALER INQUIRIES INVITED * * ***

CIRCLE 603 ON READER SERVICE CARD

68000 for your Apple UNDER $200 !

Our line of hardware & software systems for Apple II+, IIe includes a 68008 card, assembler, & FORTH for under $200 !
Write or call today for our 68008/6809 product catalog.

STELLATION TWO

Oakview, CA 93022
P.O. Box 696
(805) 649-2833

CIRCLE 604 ON READER SERVICE CARD

P.F.S.* Users, Time is Money!

Your entire program can run 2½ times faster with our **New Speedup System!**

*trademark; Software Pub. Co.

STELLATION TWO

P.O. Box 696
Oakview, CA 93022
(805) 649-2833

CIRCLE 605 ON READER SERVICE CARD

BUY DIRECT AND SAVE
FULLY APPLE COMPATIBLE

Z-80 CP/M Card	$ 39
80 Column Card w/Inverse (Videx compatible)	$ 58
Autoterm 80 Col w/Softswitch & Inverse (Videx comp.)	$ 68
Extended 80 Col w/64K Apple IIe	$ 45
Disk Controller for 2 Drives	$ 39
Parallel Printer Card w/Cable (Epson comp.)	$ 37
Graphic Printer Card w/Cable (Parallel)	$ 48
1200/300 Baud Modem External (Fully Hayes compatible)	$175
Super Serial Card w/Cable	$ 80
16K RAM Card w/Cable	$ 37
128K RAM Card w/Software & Instructions (Titan, Saturn compatible)	$110
Numeric Key Pad for Apple IIe	$ 39
Super Cooling Fan w/2 outlets Lighted Switch, Surge/Filter	$ 34
Joy Stick all Metal, Heavy Duty, Fine Tuning, self centering Apple II/II+, IIe & IIc (Specify)	$ 25
Diskette Storage Box w/Lock & Key, Holds 100	$ 15
Disk Notcher w/Guide, All Steel, Square Cut	$ 8
Slim Disk Drive - Direct Drive w/Elec Sensor, Super Quiet, 1 Yr Warranty - Apple II+/IIe	$120
Apple IIc	$130

ASSEMBLED, TESTED & 6 MONTH WARRANTY
Shippng & Handling Under $100/10% — Over $100/5%
School & Institutional P.O. Accepted - Dealer Inq. Invited
HOURS: MON-FRI 9-6 EST

COMPUTER SUPPLY
P.O. BOX 164A, VALLEY STREAM, NY 11582
(516) 239-1854

CIRCLE 606 ON READER SERVICE CARD

MACINTOSH

512K MEMORY
MOUSE
KEYBOARD
SOFTWARE
COMPLETE SYSTEM

$1595

CALL 213 540-5513
OR IN ILL 312 352 4001

STORAGE DATA/KELLECO
VISA/MASTERCARD

CIRCLE 607 ON READER SERVICE CARD

NEW!

SafeSkin™
KEYBOARD PROTECTOR

Remains in place during keyboard use. Prevents damage from liquid spills, dust, ashes, etc. Fits like a second skin, excellent feel. Available for: IBM-PC, AT, Apple (all), Compaq, Model 100, NEC 8201, C64, Zenith 150, DEC, Kaypro, KB5151, AT&T 6300, WYSE 50 and many others, Send $29.95, check, M.O., Visa & MC include exp. date. Specify computer type. Dealer inquiries invited. Free brochure avail.

Merritt Computer Products, Inc.
2925 LBJ Fwy. #180 / Dallas, Texas 75234
(214) 339-0753

CIRCLE 611 ON READER SERVICE CARD

STITCH GRAPHER

DESIGN NEEDLECRAFT CHARTS

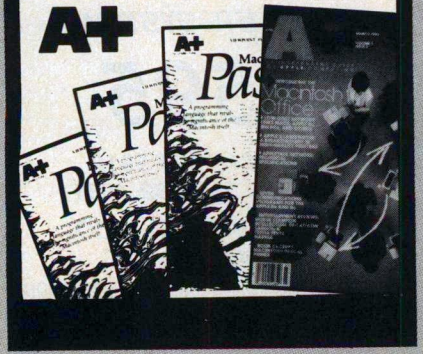
for Counted Cross-Stitch, Needlepoint, Latch Hook, Knitting, etc. using a revolutionary new computer program--*The Stitch Grapher.* Graphs up to 240 X 400 counts with up to 30 symbols may be generated and printed with any of 3 grid styles along with a color chart. A unique windowing feature allows the artist to move, copy, rotate, mirror image, save and re-use previous designs.

The Stitch Grapher is compatible with the 64K Apple II series computers. Disk plus 90-page manual--$89.95. For complete information contact: **COMPUCRAFTS**, RFD2 Box 216, Lincoln, MA 01773 or call (617) 259-0409.

Supports the Imagewriter and Scribe printers directly (depicted grid style is available for these printers only). Other dot matrix printers require special interface card or special software.

REPRINTS AVAILABLE

Quantity reprints of articles appearing in **A+ Magazine** are available and will be prepared to meet any special requirements. Inquiries should be directed to Eileen Pfeiffer, Reprints Dept., Ziff-Davis Publishing Co., 1 Park Ave., New York, New York 10016, Phone 212-503-5447



Did you know...

that A+ readers are more responsive than other Apple owners? Every month, you generate over 122,000 requests for product information. Products you read about or see advertised in A+!

For Free Information...

...on any product you see advertised or read about in A+ Magazine, look for the Reader Service Number and mark it on the Reader Service Card found in the back of this issue. The manufacturer will send you additional information free!

ADVERTISING RATES AND INFORMATION

Standard listings consist of a bold lead line (25 characters maximum); 7 lines of body copy (45 characters per line); 4 lines for company name, address and telephone number. $180 per insertion—3 issues minimum. Additional charge for extra lines and company logos. Prepayment and frequency discounts available. American Express, MasterCard, Visa accepted. Copy subject to publishers approval. Send typewritten or printed copy, reproducible logo art (if applicable) and remittance to Kathryn Cumberlander, Classified Sales Manager, Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016. For additional information, assistance, or to place an order by phone, call collect (212) 503-5115.

▸SOFTWARE/ ACCOUNTING

REALWORLD ACCOUNTING
512K Macintosh; Hard disk drive, includes Accounts Payable, Accounts Receivable, General Ledger, Payroll, Inventory Control, Order Entry/Billing, and Sales Analysis. $745 retail: each module. $445 retail; Sales Analysis.
R.M.A.
11333 N. Central Suite 219
Dallas, TX 75243
214-739-5451

▸SOFTWARE/ ENGINEERING

STRUCTURAL ENGINEERING
FRAME-MAC ($495) for 2D frame analysis & dsn. (with MacDraw-like intrfc.). BEAMAC II ($295) for continuous beam anal. & design. BEAMAC ($95) for simple beam anal. Any demo for $10. Any # of nodes, section table on disk (except BEAMAC). Any # of loads of any static type. Various dgm. & text windows. Full Mac intrfc. $-back guarantee. Info and support are free.
Erez Anzel
5800 Arlington Avenue #5T
Riverdale, NY 10471
(212) 884-5798

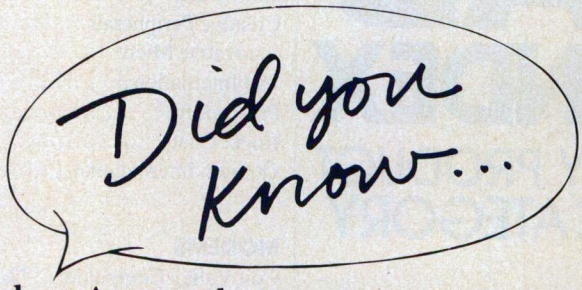
ENGINEERING TOOL KIT
MAC graphs & stats. Provides: histograms, trends, scatterplots, polynomial regression, multiple linear regression, ANOVA, optional curve-fitting (linear, exponential, power, logarithmic, & polynomial) & other statistics. MSBASIC 2.0 req'd. ($99) Also available on Apple II+/e/c with 2 drives ($59).
Sof-Ware Tools
P.O. Box 8751
Boise, Idaho 83707
(208) 343-1437

▸SOFTWARE/ FINANCIAL

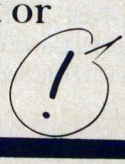
TECHNICAL ANALYSIS
PROFIT STALKER II integrated data base/ charting/terminal emulation program for analysis of stock and commodity price movement. Bar & line charts include daily, volume, open interest, on-balance volume, moving averages, oscillators, & many others including point-and-figure, & spread tracking. Automatic download. For MAC 512K & Lgr. $250. Info available.
Dept AA Button-down Software
PO Box 19493
San Diego, CA 92119
(619) 463-7474

▸SOFTWARE/ GENERAL

FLUENT FONTS™
Fluent Fonts is a collection of 48 text, graphic, & symbol fonts on 2 disks, ready to use w/any Mac Program which uses fonts. All Western & most Eastern European languages can be used in Documents w/scientific & technical symbols. Optimized for high quality Image Writer & Laser Writer Output. $49.95 + $3.00 US Ship.
CASADY COMPANY
P.O. Box 223779
Carmel, CA 93922
(408) 646-4660



that A+ readers are more responsive than other Apple owners? Every month, you generate over 122,000 requests for product information. Products you read about or see advertised in A+!



For Free Information...

...on any product you see advertised or read about in A+ Magazine, look for the Reader Service Number and mark it on the Reader Service Card found in the back of this issue. The manufacturer will send you additional information free!

A+ AD INDEX

BY PRODUCT CATEGORY

ACCESSORIES

PAGE

DISKS

Echo Data Services, Inc. 96

Page

MISCELLANEOUS

Bede-Tech 16
Computer Cover Co. 98
Norwich Data Services 122

BOOKS

PAGE

Q-Mar Group 49

HARDWARE

PAGE

DIGITIZERS

Digital Vision 16

PAGE

DISK DRIVES/STORAGE DEVICES

CMC Computer Supplies 76

INTERFACE CARDS

Applied Engineering. 10,28,29, 35,109,111
AST Research, Inc. 2,3
Legend Industries, Ltd. 88
Ohio Kache Systems Co..... 43
Orange Micro 13
Swyftware/Information Appliance 62

PAGE

MISCELLANEOUS

Cauzin Systems 42
Computer Friends 74
Covox, Inc. 122
Creative Peripherals 84
Innovative Micro 69
J&J International 69
ProApp, Inc. 17
Roger Coats 12
Quorum International 22

MODEMS

Coit Valley Computers ... 72,73
Hayes Microcomputer Products, Inc. 27

PRINTERS/PRINTER ACCESSORIES

Dresselhaus Computer Products 54
Orange Micro 13

MAIL ORDER

PAGE

Business Computers of Peterborough 61
Coit Valley Computers ... 72,73
Computer Network 87
Conroy-LaPointe, Inc. 64
Jameco Electronics 90
JDR Microdevices 75
Northeastern Software... 56,57, 102,103
PC Network 94,95
Pro/Pac 18
Programs Plus 50,51
Ribbon Land 86
Silicon Express 55
Zimco 117

SOFTWARE

PAGE

BUSINESS

Abacus Systems 46
BPI Systems 5
H & E Computronics, Inc. ..... Cover 2
Public Domain Exchange ... 26
Pinpoint Publishing 47

PAGE

COMMUNICATIONS

MGR Software 76

DATA MANAGEMENT

Statsoft 18

DEVELOPMENT SYSTEMS

Manx Software Systems 97

EDUCATIONAL

Intracorp 89
Springboard Software 1

ENTERTAINMENT/ STRATEGY

Electronic Arts 8
Infocom 19
Interlude 77
Marathon Software 108
Strategic Simulations 67
Sublogic 4

GRAPHICS

Diehl Graphsoft, Inc. 96
Precision Data Products 128
Spectral Graphics Software. 34
T & W Systems 88

MISCELLANEOUS

Big Red Apple Club 128
Computer Accents 62
Magellan Group 60
Megahaus Corporation Cover 4
Uptime, Inc. 41

ON-LINE SERVICES

Compuserve 38
Dow Jones News Retrieval 113
General Electric Information Service 52

PERSONAL BUSINESS-HOME

HowardSoft ..... Cover 3
Intuit 58

PAGE

UTILITIES

Alpha Logic Business Systems 32
Beagle Brothers 70
Central Point Software .. 60,63
Utilico 71

WORD PROCESSING/SPELLING CHECKERS

Roger Wagner Publishing 14
Sensible Software 33,66

ALPHABETICAL AD INDEX

READER SERVICE NO.		PAGE
	A	
114	Abacus Systems	46
259	Alpha Logic Business Systems	32
*	Applied Engineering	10
*	Applied Engineering	68
*	Applied Engineering	28,29
*	Applied Engineering	109
*	Applied Engineering	111
*	Applied Engineering	35
323	AST Research, Inc.	2,3
	B	
148	Beagle Brothers	70
244	Bede Tech	16
113	Big Red Apple Club	128
290	BPI Systems	5
*	Business Computers of Peterborough	61
	C	
120	Cauzin Systems	42
184	Central Point Software	60
185	Central Point Software	63
215	CMC Computer Supplies	76
105	Coit Valley Computers	73
104	Coit Valley Computers	72
271	Compuserve	38
265	Computer Accents	62
136	Computer Cover Co.	98
195	Computer Friends	74
137	Computer Network	87
129	Conroy-LaPointe, Inc.	64
*	Covox, Inc.	122
159	Creative Peripherals	84
	D	
331	Diehl Graphsoft, Inc.	96
170	Digital Vision	16
277	Dow Jones News Retrieval	113
339	Dresselhaus Computer Products	54
	E	
123	Echo Data Services, Inc.	96
168	Electronic Arts	8
	G	
*	General Electric Information Service	52
	H	
296	Hayes Microcomputer Products, Inc.	27
*	H&E Computronics Inc.	Cover 2
*	HowardSoft	Cover 3
	I	
225	InfoCom	19
153	Innovative Micro	69
177	Interlude	77
107	Intracorp	89
108	Intuit	58
	J	
279	Jameco Electronics	90
167	JDR Microdevices	75
180	J&J International	69
	L	
287	Legend Industries, Ltd.	88
	M	
275	Magellan Group	60
189	Manx Software Systems	97
293	Marathon Software	108
260	Megahaus Corporation	Cover 4
250	MGR Software	76
	N	
304	Northeastern Software	56,57
330	Northeastern Software	102,103
101	Norwich Data Services	122
	O	
178	Ohio Kache Systems Co.	43
258	Orange Micro	13
	P	
315	PC Network	94, 95
152	Pinpoint Publishing	47
228	Precision Data Products	128
175	ProAPP, Inc.	17
299	Programs Plus	50,51
172	Pro/Pac	18
256	Public Domain Exchange	26
	Q	
281	Q-MAR Group	49
223	Quorum International	22
	R	
202	Ribbon Land	86
109	Roger Coats	12
143	Roger Wagner Publishing	14
	S	
106	Sensible Software	66
227	Sensible Software	33
231	Silicon Express	55
139	Spectral Graphics Software	34
261	Springboard Software	1
207	Statsoft	18
131	Strategic Simulations	67
110	Sublogic	4
*	Swyftware/Information Appliance	62
	T	
102	T&W Systems	88
	U	
219	Uptime, Inc.	41
190	Utilico	71
	Z	
126	Zimco	117

Precision Data Products

Complete Line of Quality Supplies for Your Computer

TOLL FREE ORDER LINE
800-258-0028
FOR INFORMATION CALL
616-452-3457

INTRODUCING
STATE-OF-THE-ART MAGNETIC MEDIA
RIGOROUS QUALITY CHECKS ENSURE THEIR RELIABILITY
FROM ONE OF THE LEADING MAGNETIC MANUFACTURERS IN THE WORLD

5¼" DISKETTES

- With Hub Rings
- With Write Protect Tabs
- With Static-Free, Dust-Free Envelopes
- With User ID Labels
- In Factory Sealed Poly Packs

(YOU GET EVERYTHING BUT THE BOX) — PRICES ARE PER DISK

QTY.	50	100	500	1000
SSDD	.59	.53	.50	.47
DSDD	.62	.58	.55	.52

wabash 3½" DISKETTES
25/POLY PACK
Single Side HD 135TPI . . . **$1.40 ea.** **Double Side HD 135TPI** . . **$1.65 ea.**
INDIVIDUALLY CERTIFIED 100% ERROR FREE • COVERED BY A FULL LIFETIME WARRANTY
(MEET OR EXCEED APPLICABLE ANSI, ECMA, ISO STANDARDS
DISK HOLDER 3.5 Holds 40 diskettes . . . . . **$8.50** (delivered price)

PRINTER RIBBONS
Quality replacements for most popular printers

Apple Imagewriter . . . **$3.95 ea.**	**Okidata 80/82/83** . . . . **$1.75 ea.**
Apple Scribe . . . . . **$2.95 ea.**	**Toshiba 1350** . . . . . **$4.89 ea.**
Epson LX 80/90 . . . . . **$2.95 ea**	Minimum: 6 ribbons

Minimum order: $25.00. Add 10% for less than 50 diskettes. **Shipping and Handling:** $4.00 per 100 diskettes. Continental U.S.A. APO/FPO, add $8.00 per 100 diskettes. Reduced shipping charge for larger quantities. C.O.D. add $4.00. Cash or certified check. MI residents add 4% sales tax. Prices subject to change without notice. HOURS: 8:30 AM -6:00 PM Eastern Time.

Precision Data Products
P.O. Box 8367, Grand Rapids, MI 49518
(616) 452-3457 • Michigan 1-800-632-2468
Outside Michigan 1-800-258-0028

C.O.D.

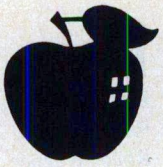
CIRCLE 228 ON READER SERVICE CARD

DO YOU LOVE PRINT SHOP™?

We do! And that's why we've created the **PS LOVER'S UTILITY SET** (P.L.U.S.). P.L.U.S. gives you ten "Print Shop™" related utility programs that are so useful, you'll wonder how you ever got along without them.

There's *CATALOG PRINTER* which will print out the picture and name of all the graphics on any library disk. Now you can organize your Print Shop Graphic Library™ disks and make charts of what is stored on each one. With *LABEL PRINTER* you can design and print mailing labels which mix Print Shop™ Graphics and text. It's great for spicing up your letters and you can even use it to design labels for your software disks. *TRANSFER* allows you to convert Print Shop™ graphics so that they can be used with Newsroom™.

If that's not enough, P.L.U.S. features seven more utilities which you'll love. P.L.U.S. requires an ImageWriter™, Apple DMP™, C.Itoh™, or Epson™-compatible printer. It will work with any standard interface card. P.L.U.S. comes complete with printed documentation describing each of the utility programs.



Order product number PS01 for only $24.95. Price includes shipping and handling! No hidden charges. MasterCard or Visa accepted.

Big Red Apple Club

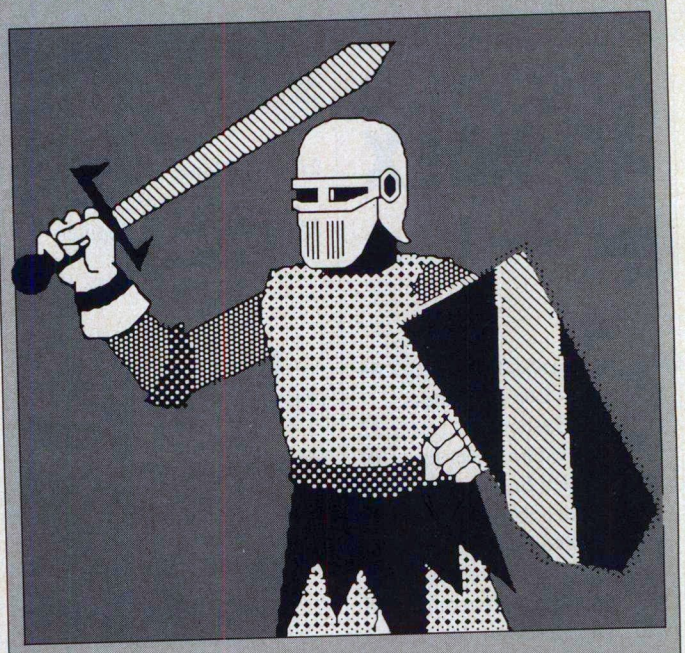
1105 South 13th Street, Suite 103
Norfolk, NE 68701

(402) 379-4680

Print Shop is a registered trademark of Broderbund Software.
Newsroom is a registered trademark of Springboard Software.

CIRCLE 113 ON READER SERVICE CARD

Coming Soon



Entertainment:

Enchanted Scepters

Moebius

Under Fire

Fraktured Faebles

Reviews:

Accounting: Large and Small Applications

Profiler ProDOS

Pinpoint Versus AppleWorks

CommWorks

Cauzin Softstrip System

Math and Science Programs for Your Apple

Homebrew Hardware:

A Write-Protect Switch for the IIc

Macintosh Coverage:

Where to Go for High-Quality Output Services

Postscript Printers

READER SERVICE CARD

Use this card to get more information about advertised products.

A+

Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

Void after October 31, 1986

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 6 months.

	(1.) Own	**(2.)** Plan to Buy
Apple II	A	H
Apple II+	B	I
Apple *//*e	C	J
Apple IIc	D	K
Macintosh	E	L
Other (specify)	F	M
None	G	N

Please indicate which of the following peripherals you plan to buy in the next 6 months. Then, for each one that you plan to buy, please indicate when this purchase will most likely be made.

	(3.) Plan to Buy	**(4.)** 1-3 Months	**(5.)** 4-6 Months
Printer	O	U	1
Modem	P	V	2
Disk Drive—Hard	Q	W	3
Disk Drive—Floppy	R	X	4
Monitor—Black & White	S	Y	5
Monitor—Color	T	Z	6

PLEASE PRINT CLEARLY—Use only one card per person

Name__________ Phone No. (____)__________

Company__________ Title__________

Address__________ Apt.______

City__________ State______ Zip__________

(Zip code must be included to insure delivery)

4. ☐ Please send me one year (12 issues) of **A+** for $19.97 and bill me—I'll save 44% off the single copy price!

A+8862

READER SERVICE CARD

Use this card to get more information about advertised products.

A+

Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

Void after October 31, 1986

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 6 months.

	(1.) Own	**(2.)** Plan to Buy
Apple II	A	H
Apple II+	B	I
Apple *//*e	C	J
Apple IIc	D	K
Macintosh	E	L
Other (specify)	F	M
None	G	N

Please indicate which of the following peripherals you plan to buy in the next 6 months. Then, for each one that you plan to buy, please indicate when this purchase will most likely be made.

	(3.) Plan to Buy	**(4.)** 1-3 Months	**(5.)** 4-6 Months
Printer	O	U	1
Modem	P	V	2
Disk Drive—Hard	Q	W	3
Disk Drive—Floppy	R	X	4
Monitor—Black & White	S	Y	5
Monitor—Color	T	Z	6

PLEASE PRINT CLEARLY—Use only one card per person

Name__________ Phone No. (____)__________

Company__________ Title__________

Address__________ Apt.______

City__________ State______ Zip__________

(Zip code must be included to insure delivery)

4. ☐ Please send me one year (12 issues) of **A+** for $19.97 and bill me—I'll save 44% off the single copy price!

A+8861

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE

Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

P.O. Box 40317
Philadelphia, PA 19106-9931

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE

Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

P.O. Box 40317
Philadelphia, PA 19106-9931

The Intelligent Decisionmakers

As an investor, your decisions depend on accurate, timely information.

The problem is that most of today's investment tools are based on outdated "guidelines" and unrealistic rules, so they can't give you the quality analyses you need to make intelligent decisions.

At HowardSoft,® we create software that's appreciated by both the inexperienced user and the seasoned pro. Real tools for real decisions.

Real Estate Analyzer®

There's a terrific piece of property you'd like to get involved with. But what happens if interest rates rise, rents fall, inflation soars? HowardSoft's Real Estate Analyzer tells you with realistic projections under today's conditions.

Because HowardSoft knows taxes, your after-tax analyses of cash flow and profitability are based on real tax laws, not outdated rules.

And you don't have to be a computer whiz or a real estate expert to use Real Estate Analyzer. Well-planned menus, clear prompts, and a manual filled with examples help you get the most from the program (and your investment) and make it a veritable education in investment analysis.

Tax Preparer®

Your taxes affect every financial decision you'll make this year. With Tax Preparer you can produce complete returns for filing with the IRS, and even organize your data for next year to make intelligent tax planning decisions. You enter information as it accumulates. Then each update lets you apply the data to the new tax forms in a matter of minutes.

Tax Preparer handles changes easily, calculates quickly and accurately, and — at the touch of a key — delivers error-free printouts ready to sign and drop in the mail. With crystal clear instructions, and the most used forms and schedules, no wonder Tax Preparer is the #1 selling tax program.

Intelligent Software

Both packages help make running your finances easier and more effective. Each works with either the Apple II series, the IBM-PC, or a select range of PC compatibles. Each does the work of software costing many times its price. And each leads the field in accuracy of information and ease of use.

Real Estate Analyzer and Tax Preparer. Intelligent investment for intelligent investors. Available at your dealer now.

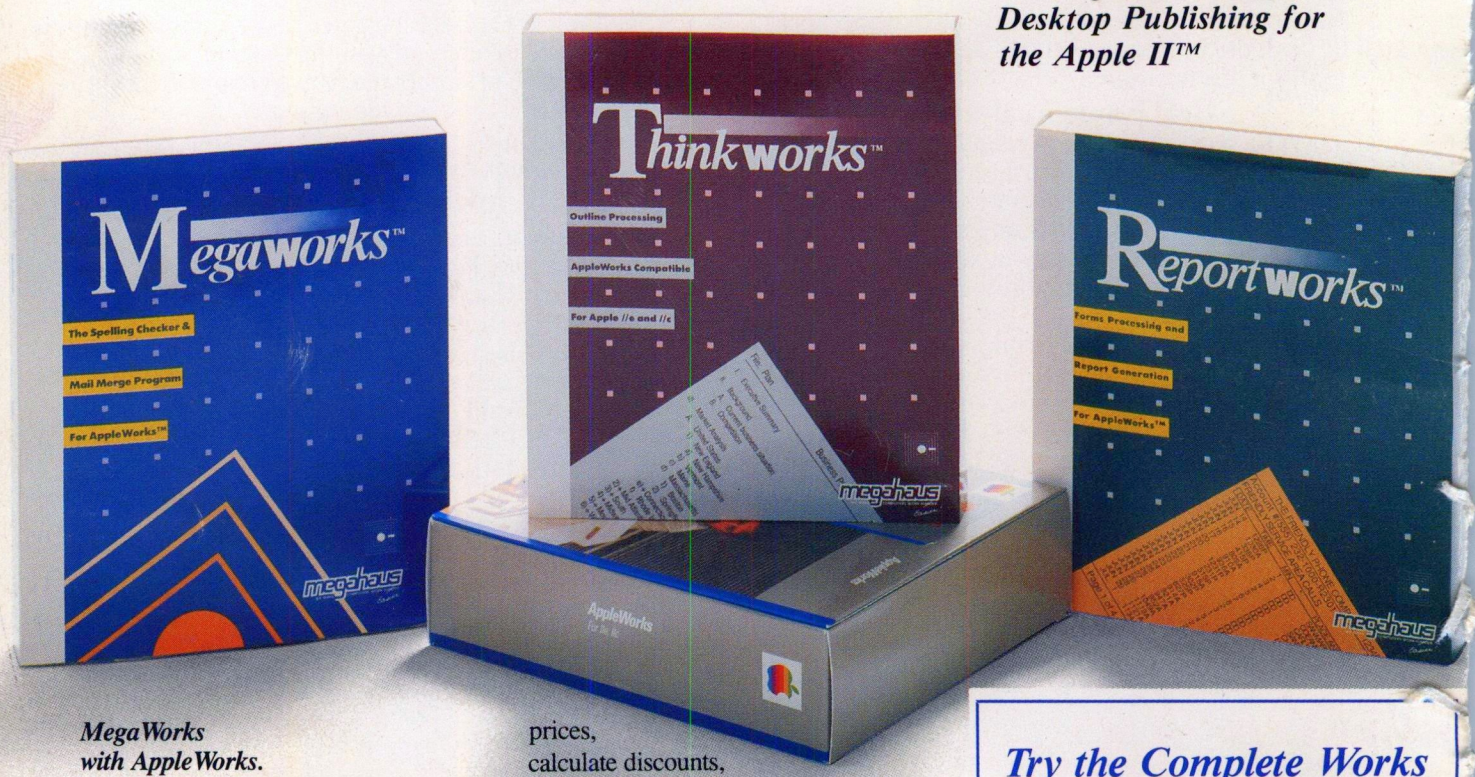
HowardSoft.®
The software investment you can count on.

1224 Prospect Street, Suite 150
La Jolla, CA 92037 • (619) 454-0121

IBM is a trademark of International Business Machines Corporation. Apple is a trademark of Apple Computer Inc. HowardSoft, Tax Preparer and Real Estate Analyzer are trademarks of Howard Software Services.

The Complete Works With AppleWorks™

Coming Soon — PageWorks™ Desktop Publishing for the Apple II™



MegaWorks with AppleWorks.

MegaWorks is the Mail Merge and Spelling correction program designed exclusively for AppleWorks. MegaWorks' mail merge lets you combine information from AppleWorks database files with word processing documents to print personalized form letters. MegaWorks' spelling checker corrects misspelled words in documents and allows you to customize its 40,000 word dictionary with 10,000 more words of your own. Both mail merge and spelling correction maintain word wrapping and pagination of documents.

ReportWorks with AppleWorks.

ReportWorks is the powerful report generator that uses your AppleWorks files to print lists, fill out forms and analyze your data. In fact, ReportWorks allows you to produce just about any kind of report in any kind of format. And ReportWorks can add tax, look up prices, calculate discounts, enter client information automatically and much, much more. Now with AppleWorks and ReportWorks you can:

- Fill out any form, including purchase orders, invoices and more
- Calculate and print estimates and proposals
- Analyze and summarize lists and other data

NOW, ThinkWorks with AppleWorks.

ThinkWorks is the powerful stand alone outline for Apple //, that also works with AppleWorks. Use ThinkWorks to organize any kind of information: lesson plans, reports, lists and proposals.

ThinkWorks is the only outline processor that allows you to combine outlines, and to include an outline inside an AppleWorks word processing document.

Try the Complete Works for only $10!!

...and receive a coupon worth up to $135.00 & your $10 back!

Call Toll Free • 7 days a week and say..."I want DemoWorks"*

Credit Card Orders Only
(Sorry, No. C.O.D. Orders)
1-800-345-8112
in PA 1-800-662-2444
For Technical Questions Call: (619) 450-1230

To order by mail, send check or money order to:
Megahaus Corporation/DemoWorks Offer
5703 Oberlin Drive
San Diego, CA 92121
Dept. DWA

***Contains interactive demos of all 3 programs and requires an Apple //c or Enhanced //e**

megahaus™
WE MAKE COMPUTERS WORK HARDER. Easier!

5703 Oberlin Drive
San Diego, CA 92121
(619) 450-1230

ReportWorks and ThinkWorks requires an Enhanced 128K Apple //e or Apple //c. MegaWorks requires a 128K Apple //e or //c. Two disk drives are strongly recommended.

CIRCLE 260 ON READER SERVICE CARD

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

P.O. Box 2964
Boulder, Colorado 80321

100% APPLE COMPATIBLE

Yes, I need a magazine that's compatible with my Apple. I need A+ Magazine.

Please enter my subscription for:

☐ 1 year (12 issues). Only $19.97. Save 44%!

☐ 2 years. Only $35.40. Save 50%!

Savings based on annual newsstand price of $35.40.

Mr./Mrs./Ms._____

please print full name

4S689

Company_____ Title_____

Address_____

City_____ State_____ Zip_____

Check one: ☐ Payment enclosed ☐ Bill me later

Add $6 per year in Canada and all other foreign countries. Please allow 30 to 60 days for delivery of first issue.

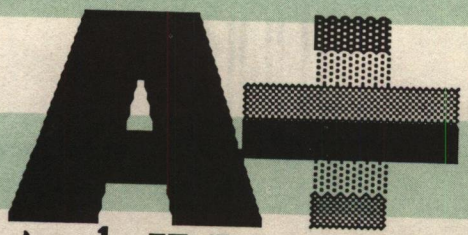
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 66 BOULDER, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE

P.O. Box 2964
Boulder, Colorado 80321



Apple II/Macintosh
THE INDEPENDENT GUIDE TO APPLE COMPUTING

at up to 50% off!

Send me: ☐ 12 issues for $19.97 — Save 44%!
☐ 24 issues for $35.40 — Save 50%!

Savings based on annual newsstand price of $35.40.

Mr./Mrs./Ms. _____
Please Print 5S365

Company _____

Address _____

City _____ State _____ Zip _____

Check one: ☐ Payment enclosed ☐ Bill me later

Add $6 per year in Canada and all foreign countries.
Please allow up to 60 days for delivery of first issue.